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Files Proposed Trade Practice Agreement

Expanding and Specialty Paper Products Industry Submits Thirty-four Specific Provisions for Appropriate Action by the Federal Trade Commission Under the National Industrial Recovery Act As Extended—Labor Provisions Are Now Being Considered by the National Recovery Administration—Hearing Nov. 20

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 13, 1935.—A proposed voluntary agreement for the Expanding and Specialty Paper Products Industry has been filed with the Federal Trade Commission for appropriate action under the National Industrial Recovery Act as extended. The labor provisions embodied in the proposed agreement have been submitted to and are now under consideration by the National Recovery Administration. The trade practice provisions included therein are before the Federal Trade Commission for consideration. In making public the proposed trade practice provisions of the voluntary agreement, the Commission issued the following notice:

Notice of Opportunity To Be Heard

"Opportunity is hereby extended by the Commission to any and all persons affected by or having an interest in the trade practice provisions of such proposed voluntary agreement to present to the Commission their views upon the same, including suggestions or objections, if any. For this purpose they may, upon application to the Commission, obtain copies of the proposed provisions. Communication of such views should be made to the Commission not later than November 26, 1935. Opportunity for oral hearing will be afforded at 10 A.M., November 26, 1935, at Room 2734, office of the Federal Trade Commission, Washington, D. C., to such persons as may desire to appear, and who have made prior written or telegraphic request to be heard orally. All such communications and briefs received concerning the proposed provisions will become part of the public record subject to inspection by interested parties. After giving due consideration to such views, suggestions, or objections as may be received concerning the rules proposed by the industry, the Commission will proceed to their final consideration."

Application for approval of the voluntary agreement for this industry was made by the Expanding and Specialty Paper Products Institute on behalf of the entire industry. According to information furnished this industry manufactures hand fold bellows expanding wallets, file folders and pocket expanding files, expanding mailing wallets and other hand fold expanding items, manufactured principally from wood pulp, jute and hemp rope fiber paper, cloth and canvass covered paper, imitation leather, etc. Total net sales for the Industry in 1934 amounted to over a million dollars. The number of employees engaged in the industry in 1934 was 647.

TITLE (a)—The Labor Provisions of the proposed voluntary agreement have been referred to the National Recovery Administration.

TITLE (b) PROVISIONS SUBMITTED BY THE APPLICANT AS THE PROPOSED TRADE PRACTICE PROVISIONS OF SAID VOLUNTARY AGREEMENT.

(These provisions have not been approved or passed upon by the Federal Trade Commission. They are proposed trade practice provisions presented to the Federal Trade Commission for its consideration and action under the National Industrial Recovery Act as extended.)

This agreement made and entered into this day of 1935, by and between the undersigned members of the Expanding and Specialty Paper Products Industry, witnesseth:

Whereas, we the parties to this agreement are all engaged in the manufacture of handfold bellows expanding wallets, file folders and pockets, expanding files, expanding mailing wallets and other handfold expanding designs, principally from wood pulp, jute and hemp rope fiber papers, (mostly of the familiar reddish-brown color), cloth and canvas covered papers, imitation leather, etc., and

Whereas unreasonable and uneconomic manufacturing and marketing practices have in the past been indulged in by us, when in competition with each other and with other manufacturers of the same products, to the detriment of the public, our employees and the distributors and consumers of our products, as well as ourselves, and

Whereas, these unreasonable and uneconomic manufacturing and marketing practices can be eliminated by our concerted action under orderly and legal procedure, substituting cooperation for division, mutual respect for a disregard of each other's rights, and improvement in the appearance and durability of the industry's products.

Now, Therefore, in consideration of the premises, the mutual covenants hereinafter set forth, and other good and valuable considerations, paid by each party hereto, the receipt and sufficiency of which is conclusively acknowledged, it is hereby mutually understood and agreed as follows:

FIRST, that we hereby appoint the Board of Directors

(Continued on page 23)

Ontario Opposes Offer for Great Lakes Paper

Minister of Lands and Forests Peter Heenan States Favorable Action on Gefaell-Aldrich Reorganization Plan Would Prove Highly Disastrous to Newsprint Industry and Injurious to Company's Interests—Right of Government to Interfere Questioned

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., November 11, 1935—A cold shoulder was turned by the Ontario Government this week to the proposed Gefaell-Aldrich plan for reorganization of the Great Lakes Paper Company. After a lengthy discussion in cabinet council, the Hon. Peter Heenan, Minister of Lands and Forests, issued a statement setting forth the Government's opposition to the sale on the ground that such action would prove highly disturbing to the newsprint industry, and injurious to the company as well.

Incensed at Government's Attitude

Representatives of the Great Lakes Company, whose bondholders voted 77 per cent to accept the offer of the Gefaell-Aldrich interests, were incensed when informed of the government's attitude. They questioned the right of any Government to interfere in a private business transaction approved by the majority of the bondholders. "The Government has nothing to do with the matter" declared a prominent bondholder. "This is a matter for the courts. If the Government can interfere in a private transaction of this kind, it places the entire timber limits of the Dominion in jeopardy. It would have the effect of shattering bond holdings involving millions of dollars. The action of the Ontario Government is an illustration of how a Government can use its power to achieve its own desires."

The Government's Potent Weapon

Cancellation of Crown timber grants to the newsprint companies is regarded as the Government's potent weapon. In the event of the Supreme Court approving of the sale of the company, the Government could, if it so desired, cancel the grants. The Government statement is as follows:

Government's Statement

"The Government has thoroughly examined all aspects of the proposed Gefaell-Aldrich plan for re-organization of the Great Lakes Paper Company and is opposed to further efforts to complete this plan or any other plan of this character. The Government believes that such a plan would be likely to prove highly disturbing to the industry and would ultimately prove detrimental to the owners of the Great Lakes property also, since the welfare of any company necessarily depends upon the condition of the industry as a whole.

"The injurious effects that may followed if these proposals were carried out would not be confined to the company and the industry itself but wages, conditions of labor, Government revenues by way of timber dues and power rates and the public interest generally would be threatened. It is not for the Government to suggest what action the Great Lakes Paper Company bondholders should take, though it is believed that suitable alternatives to the Gefaell proposal could be found. The Government's position is that, to protect the public interest, it must actively oppose the plan."

The Industry Is Grateful

Charles Vining, president of the Newsprint Export Manufacturers' Association of Canada, issued the following statement following the council meeting:

"The decision of the Ontario Government to oppose the Gefaell plan, as expressed in the Hon. Mr. Heenan's statement, will be received by the Canadian newsprint industry with gratitude and relief. The industry has been unanimous in its opinion that the Gefaell proposals constitute a serious danger to all the Canadian interests at stake, including the Great Lakes property, and the position now taken by the Ontario Government will give the industry new heart in coping with its difficulties.

"Newsprint is Canada's largest manufacturing industry and its condition has a profound effect upon the economic welfare of the whole Dominion. Many thousands of citizens engaged in forest operations, mill workers and the workers of allied enterprises, are directly concerned, as well as thousands of investors who have put their money into the industry's development and now hope for its recovery. I am sure that all those who appreciate the national importance of newsprint will feel that the Ontario Government has acted with courage and a sense of public duty in the decision it has made."

Power Mills to Shut Off

Following the cancellation of power contracts between the Hydro Electric Power Commission of Ontario, and Quebec power companies, Quebec Power is not being taken by the Commission, it was announced at Queen's Park, Toronto, this week, except for a limited amount from Gatineau. Without proclaiming the act, the shut-off has been made virtually complete. The Maclaren-Quebec plant near Buckingham, Que., shut down last Saturday, except for those portions and units which supply paper mills and purchasers other than Hydro.

As quickly as possible, the Hydro Power Commission intends to cut off the power sold to many other companies at an enormous loss for steam purposes. Already notice has been received by the Howard Smith Paper Mills, Ltd., at Cornwall that the approximately 30,000 hp. delivered by the Hydro will be stopped in a few days, as soon as the paper company can wash out and overhaul its boilers for switching back to coal for steam.

Besides the 50,000 hp. to 100,000 hp. that formerly went to the International Paper Company, the Hydro supplies from the Niagara system 100,000 hp. to the Ontario Paper Company at Thorold; 7,000 hp. to the Interlake Paper Mills at Merritton; 9,000 hp. to Provincial Paper Mills at Thorold; and 30,000 hp. to the Howard Smith Paper Mills at Cornwall. In addition Hydro supplies power for steam to a paper company at Port Arthur and another company at Smooth Rock Falls, but this comes from Thunder Bay and Abitibi systems, generated by Hydro's own plants, and will not come into the picture at present.

From authoritative sources it is learned that it is the intention of the Government and the Hydro to cut off all sale of power for steam purposes at the $4.80 hp. or three-quarter of a mill price to all companies using it in the Niagara District. This will be done gradually, giving time to the companies to get reserve stocks of coal and their steam plants adjudged. It is stated that this cut-off of power for steam purposes applies only to the excess power that was being bought by the commission from the Quebec power companies under the old contracts of $15 a hp. and salvaged for use in developing steam at $4.80 a hp.

Demand for Paper Slightly Lower In Chicago

Slowing Up of Forward Movement Attributed to Approach of Inventory Period—Various Standard Grades of Fine Paper Continue Steady—Kraft Paper Section Exhibits Strong Undertone, With Quotations Well Sustained—Paper Stock Position Irregular

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., November 11, 1935—The specter of approaching inventory again makes its appearance in the Chicago market though this appearance has only been sufficient to barely break the forward movement of the local paper industry. The slight intimation of slowing up comes from those who find their outlets anxious to avoid year-end inventory taxes which are in force in several states. December is expected to witness some slowing up in buying as all inventories are pared to the minimum. After January 1, however, the local trade expects an appreciable upturn and a continuance of present evident improvement.

Despite the minor decline in demand, prices continued to be firm in virtually every line, and there is every reason to believe, as expressed locally, that the price situation leaves little to be desired in most lines. Specifically, kraft markets kept up in demand during the week with the undercurrent reported favorable. Fine papers remained about the same with some slight falling off in demand due to inventory time. Books and covers received some local stumulus from the D. M. A. A. meeting, as did most business and advertising papers. Waste papers continued uneven, with some of the higher grades registering slight improvement.

Paper Exhibits Attract

Chicago paper executives spent a full three days enjoying the annual Direct Mail Advertisers' Association exhibits held at the LaSalle Hotel during the past week. Not only was there a full meeting program, which attracted the sales and executive heads of many firms, but there was also the impressive exhibit on the nineteenth floor of the LaSalle to invite plenty of inspection. A large number of the well-known paper manufacturers and distributors contributed materially to the success of the traveling exhibit which, in Chicago, met with enthusiastic crowds.

Paper exhibits were concentrated in about four specific spots, the first carrying the display of the S. D. Warren Company and the exhibit of the Howard Paper Company through the Midland Paper Company; Moser Paper Company and Parker, Thomas & Tucker, Chicago distributors. Dwight Brothers, Moser, the Whitaker Paper Company, Bradner Smith & Co. and the James White Paper Company were listed as distributors in the Appleton Coated Paper display which featured "Inca Cover." Stratmore's line of covers credited the local outlet to J. W. Butler Paper Company, Swigart Paper Company, Chicago Paper Company and the James White Paper Company. The latter had an exhibit of its own, showing a complete line of cover stock.

The 1936 Dill & Collins line was "tipped off" at the convention while Crocker-McElwain and the Chemical Paper Manufacturing Company also advised of new and improved products to come. The Hammermill papers for direct mail use were attractively displayed with Chicago Paper, Bradner Smith and Swigart listed as local distributors.

A novel and moving display of business papers featured the Rising exhibit while Bermingham & Prosser, well-known jobbers, adopted the catch line "Start with the Rite Paper." Bermingham & Prosser, Butler's and the Messinger Paper Company benefitted by the comprehensive display of International Paper Company products, while the "Direct Mail Users News" of the Whiting Plover Paper Company was carried over a distributors list composed of Midland Paper, Swigarts, Bermingham & Prosser and Moser.

Bradner Smith & Co. and the Whitaker Paper Company were listed as "Eagle-A Service Houses" of the American Writing Paper Company. A co-ordinated display of Atlantic Bond was offered by the Eastern Manufacturing Company through the LaSalle Paper Company and Dwight. Dwight Bros. Paper Company also had its own exhibit featuring Tiffany Enamel and Wedgewood Offset. The coated cardboard line of the Falulah Paper Company was next in line. The Gilbert Paper Company thermometer impressing the value of rag content paper rounded out the paper exhibits.

APPA To Meet Here

The local paper industry is looking forward to the regular meeting of the American Pulp and Paper Association which is going to be held at the Drake hotel in Chicago on November 20. This marks the first time in many years that the APPA has met in Chicago, according to local commentators, who credit President Sensenbrenner with having much to do with the bringing of this important session to the middle west.

The entire week of November 18 will find a number of organizations within the industry building meetings around the APPA sessions, which also include an important board of governors' meeting. Book, writing and other associations expect to convene in Chicago during the week.

The Midwest Division of the Salesmen's Association of the Paper Industry will forego its regular Monday meeting on November 18, according to Vice-President Johnson, and will work for a large and representative attendance at the APPA sessions, the Salesmens' Association being affiliated with the larger organization.

Members of the paper industry were included among the list of those who journeyed to Springfield earlier in the week to vigorously protest the enactment of unemployment compensation legislation in this State. Ray Wantz, Rockford Fibre Container Company; Merle Sears, of the Merle Sears Paper Box Company, and J. E. Wright, of the Vortex Paper Company, were among those scheduled to plead the case of industry against this proposed legislation.

The Swigart Paper Company utilizes the popularity of radio to focus immediate attention on its latest mailing piece. "Announcers Ted Husing, Ford Bond, James Wallington, Graham McNamee, David Ross are heard only," reads the cover message, while the inside of the broadside simply announces that Swigarts Linweave, Fairbanks and Japan "voice the printed message; portray the romantic story; touch the hand with quality and radiate charm and good taste." It is an effective tie-up, telling an interesting story of Linweave domestics and imports. The attractive mailing piece also announces additional features of the Swigart Sample System.

Paper Business Slightly Better In Philadelphia

Hope Freely Expressed That More Prosperous Times for Paper Industry Are On Way—William A. Meek to Address Paper and Cordage Merchants on "The Value of Cooperative Effort"—Wrapping Paper Division of Paper Trade Association to Meet

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., November 11, 1935—To the inevitable inquiry among the paper merchants this week—"How is business?" the answer almost invariably was "It's better." To the next inquiry of "Do you think it is going to keep up?" the reply was, "I hope so."

Underneath the second reply lies the curious mixture of longing, hope and uncertainty—longing for the better times to which the paper merchants feel they are entitled, hope that they are really on the way, and uncertainty as to the frosts and blights that the tender plant of recovery may sustain from what might come out of Washington either in the way of "statements" or in the way of new experimental legislation in the Congress that will be with us soon.

Association Activities

On Wednesday of this week there is scheduled a meeting of the Wrapping Paper Division of the Paper Trade Association of Philadelphia at 1 o'clock in the headquarters of the association.

As was announced in these columns last week, the suggestion of having bi-weekly luncheon meetings of members of the Philadelphia Waste Merchants' Association was well received, and already notices over the signature of Secretary Dominic A. Di Santi have been sent out to members that the first of these luncheon meetings will be held tomorrow (Tuesday), at 12:30 in the Ivory Room of the Adelphia Hotel.

The Paper and Cordage Association of Philadelphia will hold its regular monthly meeting this Friday in the Adelphia Hotel. William A. Meeks, executive secretary of the Typothetae of Philadelphia, will be guest speaker. He will speak on "The Value of Co-operative Effort in Business." James Andrews, of Schuylkill Paper Company and chairman of the nominating committee, will report the nominees, whose election will take place at the December meeting of the association. E. K. Lay, chairman of the entertainment committee, will discuss plans for the Christmas Party, which is given annually to fifty kiddies recruited from the ranks of the Salvation Army.

Whiting-Patterson Co. Progresses

Continuing mounting popularity of the Gilbert line of fine paper is reported by the Whiting-Patterson Company of 420 North 13th street, for the past quarter century manufacturers of envelopes and distributors of fine papers. Whiting-Patterson Company is exclusive distributor in the Philadelphia metropolitan area for the products of the Gilbert Paper Company, of Menasha, Wis., producers of a nationally advertised line of rag content bond and ledger paper. Heading the line is the widely known Lancaster Bond paper, made of 100 per cent new rags. Whiting-Patterson officials describe Lancaster Bond as the "aristocrat of bond papers," pointing out that it comes from one of the most modern mills in the world, equipped with the last word in machinery.

Lancaster Bond is made in white and in six colors—pink, green, buff, blue, cafe and grey. Other items in the Gilbert line, which have been known in this area for more than fifteen years, are Dreadnaught, Parchment, super 100 per cent rag; Valiant Bond, 75 per cent rag; Radiance Bond, 65 per cent rag; Resource Bond, 50 per cent rag; Dispatch Bond, 25 per cent rag, and Cardinal Bond, 100 per cent super sulphite.

Whiting-Patterson is also exclusive distributor here for the Ticonderoga, Saratoga and Champlain book paper lines of the International Paper Company, and handles the Casion papers of the Munising Paper Company. In its wide field, this firm distributes all grades of printing papers, bonds, ledger paper, linen, cardboard, bristol board, cover paper and coated and uncoated book, specializing in the better grades.

The company is widely known as an envelope manufacturer, its factory having a capacity of over 2,000,000 machine-made envelopes of various sizes. Whiting-Patterson, considered one of the largest envelope manufacturers in Pennsylvania, produces commercial, window, clasp and catalogue, air mail, coin and cellulose envelopes. Transparent cellulose envelopes are one of the newer developments in the business. They are used for packaging women's silk hosiery, powder puffs, candy, etc.

Being essentially a selling organization, Whiting-Patterson prides itself upon having one of the largest and most competent sales staffs in the city. Every W-P salesman is thoroughly qualified by long experience to help printers and paper users generally in the selection of the right papers. Fifteen men effectively cover a wide territory extending over Delaware, Eastern Pennsylvania and Southern New Jersey. In addition, a branch office in New York City employs another force of four men to work that area.

Recently the company once more emphasized its progressive business tradition by establishing a new feature service to aid its customers. Whiting-Patterson established a promotion department to co-operate with paper and envelope retailers to aid them in improving the quality of their advertising in order to increase the sale of merchandise.

Whiting-Patterson was founded as a partnership in 1910 and was incorporated two years later. The present officers of the company are A. E. Whiting, president; R. W. Fishburn, vice-president; F. M. Kurz, treasurer, and Frank Pollard, secretary.

This firm reports their total business thus far for the month of November is maintaining the level of October, and in the paper division is exceeding the level of October.

News of the Industry

J. L. N. Smythe Company, 30 South 6th street, has recently appointed Gordon Barrett and John Bland to their sales organization in the wrapping paper department.

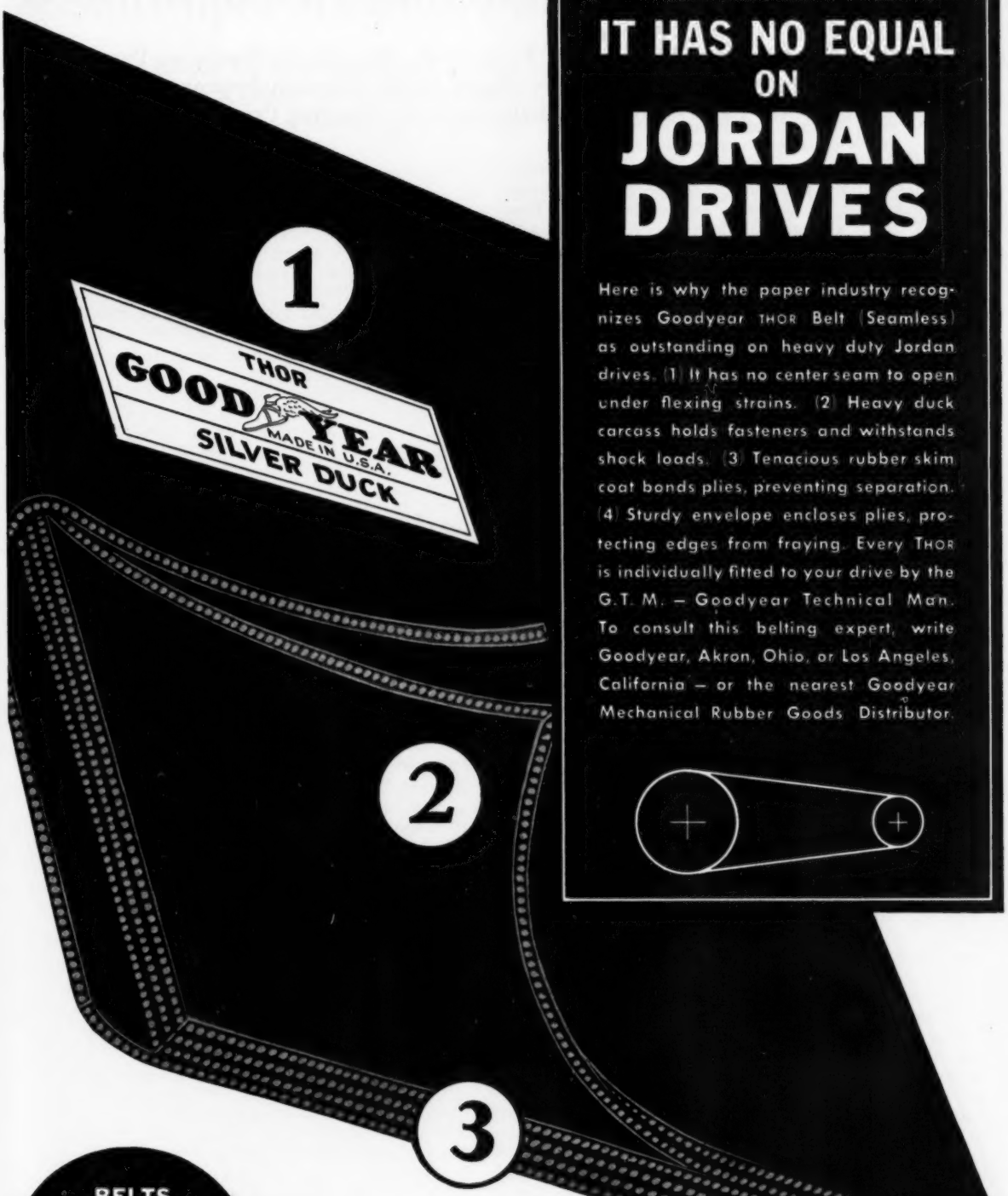
Celebrate Golden Wedding Anniversaries

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., November 9, 1935. — On October 27, 1935, three men prominently identified with the paper industry in the Kalamazoo Valley, with their wives, celebrated their golden wedding anniversaries. Mr. and Mrs. W. B. Milham, Mr. and Mr. Fred H. Milham and Mr. and Mrs. E. H. Gilman were all wed on the same date fifty years ago. Mr. Gilman is general superintendent of the Watervliet Paper Company; W. B. Milham is an executive of the Bryant Paper Company and F. H. Milham is retired.

IT HAS NO EQUAL ON JORDAN DRIVES

Here is why the paper industry recognizes Goodyear THOR Belt (Seamless) as outstanding on heavy duty Jordan drives. (1) It has no center seam to open under flexing strains. (2) Heavy duck carcass holds fasteners and withstands shock loads. (3) Tenacious rubber skim coat bonds plies, preventing separation. (4) Sturdy envelope encloses plies, protecting edges from fraying. Every THOR is individually fitted to your drive by the G.T. M. – Goodyear Technical Man. To consult this belting expert, write Goodyear, Akron, Ohio, or Los Angeles, California – or the nearest Goodyear Mechanical Rubber Goods Distributor.



BELTS
MOLDED GOODS
HOSE
PACKING
MADE BY THE MAKERS OF GOODYEAR TIRES

THE GREATEST NAME IN RUBBER
GOODYEAR

Demand for Paper Continues Active In Boston

Business In Fine Paper Division Reported Very Good—Request for Wrapping Paper Well Sustained—Paper Bag Quotations Steadier—Paper Stock Situation Improves, With Old Waste Papers Arousing Better Interest—Bagging Prices Higher

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 11, 1935—The general activity which has characterized the wholesale paper market here for a month or so was well sustained last week. The majority of reports from the fine paper division are "good," "fairly good" and "very good." Similar reports are gleaned from the wrapping paper division. At the office of one firm it was stated that business was fairly good, with "no complaints to make at all." The demand for paper bags was fair. The price situation in paper bags continued better. In specialties, Christmas orders came in well. The demand for box boards was moderately good, although business was not quite so active as last month.

Paper Stock Market Active and Strong

The paper stock market as a whole was active and stronger. There was a favorable call for old papers, with dealers having no trouble in disposing of material. No. 1 kraft, however, declined to 1.00 from 1.10. Bagging was fully as firm, with advances sustained and several grades registering higher prices. Foreign gunny No. 1 rose to 2.00 from 1.90, scrap sisal to 1.75@2.00 from 1.40@1.50, scrap sisal for shredding to 1.75@2.00 from 1.60@1.65. Australian wool pouches to 3.00@3.25 from 2.50@2.75, and heavy baling bagging to 2.50@2.75 from 2.00@2.25. New domestic rags were in good demand, with values unchanged. Old domestic rags were rather slow, but prices remained the same. A smaller amount of foreign rags was imported, although quotations were unaltered.

Association Activities

Henry Cabot Lodge, Jr., representative of the General Court from the 15th Essex District and House Chairman of the Committee on Labor and Industries, will be the speaker at the Fall Meeting of the Boston Paper Trade Association, to be held November 20 at the Exchange Club. Mr. Lodge's subject will be "The National Outlook." The reception will be at 6:30 o'clock and the dinner at 7. Group singing will be led by E. Lindsey Cummings. The membership committee has approved the following applications: Regular membership—Emmett Hay Naylor, Writing Paper Manufacturers' Association, proposed by Frederic W. Main. Special membership—Everett E. Ketcham, Southern Kraft Corporation, proposed by T. Charles Casey; William S. Smock, Crown Willamette Paper Company, proposed by John E. Roach. The officers, 1934-35, are: President, Frederic W. Main; First Vice-President, F. Bendel Tracy; Second Vice-President, W. J. Raybold; Treasurer, T. Charles Casey; Secretary, J. L. Hobson.

The Fine Paper Division of the New England Paper Merchants' Association held a luncheon meeting at the Boston Chamber of Commerce on Thursday, with Frank H. Winter, vice-president in charge of that division, presiding. Important matters were discussed. Twelve members were present.

The November meeting of the New England Paper Merchants' Association is to be held on the 26th at the Hotel Touraine. The association is to try the experiment of having the divisional meetings of fine and wrapping members, respectively, before the dinner rather than after, as heretofore.

News of the Industry

A meeting of representatives of the District of Columbia Paper Manufacturing Company, Washington, D. C., was held November 2 with salesmen of John Carter & Co., Inc., which has taken the agency for the blottings of the Washington concern. W. W. Langtry, sales manager for the District of Columbia company, spoke, explaining in regard to the line.

The Worthy Paper Company, Mittineague, Mass., makers of the very finest papers and flats, have issued an exceedingly handsome sample book, displaying their complete line of standard papers.

Eugene Dunbar has become connected with the advertising dpartment of the Groveton Paper Company, Groveton, N. H., with the Boston office as headquarters.

As usual, the paper houses are closed today, Armistice day.

Paterson Card & Paper Co. Moves

The Paterson Card and Paper Company has moved to larger and more desirable quarters at 730-36 Madison Avenue, Paterson, N. J., which property it recently acquired.

At the new address the firm occupies a 85 x 175-foot two-story building which gives it opportunity for increased facilities. One feature is that it offers parking space to customers; also facilities for extending its own truck service. Another feature is that the increased space has permitted the concern to enlarge and improve its paper ruling and card cutting plant.

Herman R. Prell, president, who organized the business with quarters in Godwin Street, incorporated it in 1919 when it moved to 68 Washington Street and later to Railroad avenue, reports that a general expansion program is being inaugurated which will include the addition of several well-known lines. These will be added to the present lines it handles from the leading mills:

District of Columbia Paper Manufacturing Company, Howard Paper Company, Maxwell Paper Company, Carew Manufacturing Company, Aetna Paper Company, W. C. Hamilton & Sons, Strathmore Paper Co., Geo. La Monte & Son, Linton Bros. & Co., American Writing Paper Company, International Paper Company, Albemarle Paper Manufacturing Company, U. S. Envelope Company, Wheelwright Papers, Inc., Riegel Paper Corporation, Lowe Paper Company, Paper City Manufacturing Co., Kent Paper Co., Champion Paper and Fibre Company, Allied Paper Mills, Miami Valley Coated Paper Company and Holyoke Card and Paper Company.

In the case of District of Columbia the Paterson firm is exclusive distributor of its blotting papers in New Jersey.

It also handles specialty papers of such well-known manufacturers as Victoria Paper Mills, Tissue Corporation, Vortex Cup Company, and wrapping papers. Two years ago the firm opened a store and warehouse at 280 Plane Street, Newark. This branch of the business has been growing steadily and this month additional employees were added to cope with the increased business.

Wausau Paper Mills Co. Purchases Lumber Plant

Subsidiary of Company Takes Over Brooks & Ross Lumber Co.'s Plant At Schofield—Plan of Co-Ordination to be Worked Out to Utilize Timber—Ben Alexander, President of Paper Company, Also Elected President of Lumber Subsidiary

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 11, 1935—Wausau Paper Mills Company, at a meeting of stockholders and directors last week at Wausau, Wis., approved purchase of the Brooks and Ross Lumber Company mill at Schofield. A wholly owned subsidiary of the paper company was organized to take over the mill and operate it, with Harold C. Collins as manager. A plan of co-ordination will be worked out to utilize wood supplied both the paper mill and the lumber mill.

Ben Alexander, president of the paper company, also was elected president of the lumber subsidiary, to be known as the Yawkey-Alexander Lumber Company. Other officers are: C. C. Yawkey and Harold C. Collins, vice-presidents; Aytch P. Woodson, secretary, and Mr. Collins also as treasurer. Additional members of the board of directors are W. B. Clements, E. H. Larkin and W. L. Edmonds.

Operation of the lumber mill is assured for ten years, based on the available timber supply.

Sterling Operates Full Time

Because of the heavy demand for fruit wrapper stock, the Sterling Pulp and Paper Company, Eau Claire, Wis., has been operating both its pulp and paper mills on a full production schedule. Full crews are maintained on a full-time basis. This condition has prevailed steadily for the last two months, and the outlook is that it will continue. The company also has had a good demand for its newsprint and other grades.

British Chemist Marks Technical Progress

Marked technical progress has been made in the American paper industry during the last five years since he visited here, P. H. Prior, research chemist for the A. E. Reed Company, Aylesford, England, said in an interview while visiting the Institute of Paper Chemistry, Appleton, Wis. Advances has been made in quality of product as well as in technical ability, he said. American newsprint, for example, has improved considerably, with more uniform finish and formation, and is now quite equal to the English product.

Mr. Prior finds that American newspaper rotogravure sections are more advanced than the English, but the British are making rapid progress in that field. He was quite impressed with the pace set by Canadian mills in the use of large and fast machines. He reports that one 270-inch and one 310-inch machine are being installed in England now. British mills are still operating on 8-hour shifts, and working conditions are generally similar to those in America.

Personnel Changes Announced

A number of personnel changes have been announced during the last week. M. C. Dickoff, office manager of the Marinette and Menominee Paper Company, Marinette, Wis., division of the Continental Bag and Paper Corporation, has been promoted to manager of the Marinette mill, according to announcement of A. G. Stone, general manager of Continental. He succeeds A. B. Hansen, who recently begame general manager of the Northern Paper Mills, Green Bay, Wis., succeeding Judson G. Rosebush. John Zieman, superintendent of the M. & M. sulphite plant, has been placed in general charge of operations.

G. D. Muggleton, mill manager for the Combined Locks Paper Company, Appleton, Wis., has resigned and with his family will spend the winter at Daytona Beach, Fla. He is succeeded by Lyman Beeman, who was associated with the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis. Eric Wheeler of Portland, Me., has joined the Combined Locks engineering staff, and has moved his family to Appleton.

Irving H. Reynolds, manager and chief engineer of the engine department of the Allis-Chalmers Company, Milwaukee, Wis., will retire December 31. He started work with the company 51 years ago as engineering assistant. He started development of the triple expansion pumping engine, and his design spread to rapid usage all over the country. Mr. Reynolds left the company in 1904 to become vice-president and general manager of the William Tod Company, Youngstown, Ohio, but returned in 1912. He has served the company in the last year only in an advisory capacity, and will retire permanently at the close of this year.

Pool Car Shipments Increase

A liberal increase has been reported by the Wisconsin Paper Group, Neenah, Wis., in its pool car shipments to various jobbing centers. In September the pool handled 171 cars, with a total of 8,637,760 pounds. This represents club cars only, and does not include customers' cars assembled from various member mills nor straight cars from one mill to destination. This organization makes up pool cars from its membership of twenty-eight mills and converting plants in Wisconsin, and offers jobbers the benefits of full carload shipments to various cities on 209 distinct kinds of papers, backed by active advertising support. The largest pool shipments for September were twelve cars to Chicago, sixteen to New York and eleven to Minneapolis-St. Paul. Fourteen cars went to the west coast.

Bergstrom Protests Assessment

A valuation of $950,000 placed on the Bergstrom Paper Company mill at Neenah, Wis., in a reassessment of all real estate in the city was protested by the company in hearings before the municipal board of review. The assessment is $100,000 above the prior valuation, and the company sought to show this increase was unjust. E. J. Dempsey, counsel for the company, contended the knowledge of the assessor was not competent in evaluating paper mills, and that depressed business conditions had lowered values, as evidenced by sales of other mills. Attorney W. K. Parkinson of Phillips, Wis., was retained as special counsel for the city. After extensive hearings and testimony, the board of review sustained the assessor and insisted the assessment should stand at $950,000.

News of the Industry

Recent shipping arrivals include a cargo of 9,750 bales of sulphite pulp from Sweden aboard the steamer *Redfern* of Montreal, for the Marathon Paper Mills Company,

Ashland, Wis., and approximately 1,500 cords of pulpwood on the Canadian steamer *Troindoc* for the Kimberly-Clark Corporation's mill at Kimberly, Wis., from Port Arthur, Canada. The latter was reloaded on barges of the Fox River Navigation Company at DePere, Wis. One of the barges carrying wood to Kimberly listed while being loaded, and most of the cargo slipped into the Fox River. Numerous boats were put out and most of the shipment was recovered. The Soo Line is bringing an average of twelve to fifteen cars of pulpwood daily to Appleton mills. Movement of 3,000,000 feet of logs from northern Wisconsin and Michigan to lumber mills at Shawano, Wis., is under way. The waste material from sawmill operations will be used as pulpwood by the Wolf River Paper and Fibre Company at Shawano.

E. W. Tinker of Milwaukee, Wis., who has been largely responsible for the mammoth reforestation progress in the Lake States section as regional U. S. forester, has been promoted to the position of assistant chief forester with headquarters in Washington, D. C. He took charge of the central region in 1929, and has established nine national forests in Wisconsin, Michigan and Minnesota. He will assume his new duties January 1, 1936.

The Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., has given the federal government the option to purchase 5,000 acres of land on Isle Royale in Lake Superior. The isle is to become a national park in order to preserve its scenic beauty and attraction for tourists, as well as its timber resources. A warrant of $705,000 has been approved at Washington for the purchase, including the Consolidated hodings. The company started logging on the isle last summer, precipitating a movement among civic organizations to have the government acquire it.

Work will be started soon on a substantial addition to the Paper Makers' Chemical Corporation plant at 5228 North Hopkins street, Milwaukee, Wis. The structure will be one story, and will be 90 by 200 feet. It will be of brick and steel. The company has found it necessary to increase its manufacturing space.

Sawyer Paper Company, Neenah, Wis., has started construction of a warehouse addition 36 by 32 feet. It is of concrete construction, and will provide both additional office and warehouse space. The cost will exceed $2,000.

Paper Pulp Mill Planned at Wenchi, China

British Boxer Indemnity Funds may be used to finance the construction of a Chinese paper pulp mill, according to advices to the Commerce Department from Shanghai.

For several years past, it is pointed out, the Ministry of Industries has had under consideration the establishment of an enterprise of this type at Wenchi, southern Chekiang province. Lack of funds has up to the present time delayed the plans for the development of this industry.

Recent published reports indicate that efforts are being made to secure British Boxer Indemnity funds for the purpose. An article appearing in the British Chamber of Commerce Journal (Shanghai) would appear to give substantial credence to these reports, according to the Commerce Department.

The article in question takes the stand that it is inadvisable for the Government to undertake a competitive commercial enterprise but is favorable to the Ministry of Industries making a loan to private interests for the erection of a pulp mill. It points out that there is an ample supply of suitable wood near Wenchi, that the Chinese paper market is increasing and that there should be reasonable prospects of success for a domestic paper mill producing newsprint, it was stated.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 13, 1935.—The Government Printing Office has announced the following paper awards.

The R. P. Andrews Paper Company will furnish 11,500 pounds (50,000 sheets) of 22½ x 28½ single ply white sulphite index at 6.06 cents per pound; J. W. Butler Paper Company will furnish 72,950 pounds (700,000 sheets) of 25 per cent rag blue and yellow bond paper at 9.025 cents per pound; Mt. Holly Paper Company will furnish 128,000 pounds (1,000,000 sheets) of 32 x 44, 25 per cent rag yellow bond paper at 9.06 cents per pound. Bids for all these items were received on October 25.

Barton, Duer & Koch Paper Company will furnish 3,000 pounds (17,000 sheets) of 24 x 38, 25 per cent rag buff ledger paper at 10.24 cents per pound and 7,125 pounds (50,000 sheets) of 75 per cent rag, 28 x 34 buff ledger paper at 17.24 cents per pound, bids for which were received on October 23.

Barton, Duer & Koch Paper Company will furnish 44,000 pounds (368,000 sheets) of 50 per cent rag, various size white, ledger paper at 11.22 cents per pound and remainder colored same at 12.22 cents per pound. The same firm will also furnish 46,000 pounds (800,000 sheets) of 25 per cent rag white bond paper at 8.48 cents per pound. The Old Dominion Paper Company will furnish 29,600 pounds (100,000 sheets) of 24 x 38 high M. F. sulphite manila tag board at 5.45 cents per pound. Bids for these items were received on October 21.

The Printing Office has received the following bids for 40,000 pounds (400,000 sheets) of No. 2 kraft wrapping paper; Enterprise Paper Company, 4.04 cents per pound; J. W. Butler Paper Company, 4.55 sents; R. P. Andrews Paper Company, 4.28 cents; Whitaker Paper Company, 4.04 cents; Mathers-Lamm Paper Company 4.028 cents; and Stanford Paper Company, 4.41 cents.

The following bids were also received for 30,000 pounds (150,000 sheets) of moss green desk blotting paper; L. Hyman & Sons, 7.76 and 7.27 cents per pound; R. P. Andrews Paper Company, 7.76 and 7.27 cents; Cauthorne Paper Company, 7.76 cents; Whitaker Paper Company, 7.76 and 7.27 cents; Old Dominion Paper Company, 7.76 cents; J. R. Howarth Paper Company, 7.5 cents; Barton, Duer & Koch Paper Company, 7.76 cents; Mathers-Lamm Paper Company, 7.76 cents; and Enterprise Paper Company, 7.76 cents.

C. F. Burgess Made Chairman

C. F. Burgess Laboratories, Inc., Madison, Wis., announces that marking the close of twenty-five years of its corporate existence, the office of Chairman of the Board has been created, that C. F. Burgess has been elected to this office, and that Arba B. Marvin, of New York, has been elected President. Mr. Marvin, as a participant in the organization of the laboratories, and as its attorney for more than twenty years, is thoroughly familiar with the laboratories' purpose of doing scientific research on a commercial basis.

David D. Darling with Aldine

The Aldine Paper Company announces the appointment of David D. Darling as manager of their Fancy Paper Department. Mr. Darling was formerly associated with A. M. Davis Company of Boston, Mass. for a period of more than 17 years. He has a wide knowledge of paper problems as they relate to advertising and printing.

FILES PROPOSED TRADE PRACTICE AGREEMENT

(Continued from page 13)

of the Expanding and Specialty Paper Products Institute to be the Administrative Agency for carrying out the terms of this agreement, with the stipulation that the said Board of Directors shall employ an impartial, disinterested agent for the collection and compilation of statistics, and for any and all other duties of a confidential or clerical nature, that may grow out of this agreement, such person or firm to be hereinafter referred to as the Administrator.

SECOND, that nothing in this agreement shall ever be taken or construed as implying recommending or suggesting any restriction whatsoever, upon the liberty and duty of each of us to determine independently, each and every element of his own prices, discounts and terms, the selection of his own customers and territory, the amount of his own production, and every other detail of his own business, in respect of which the law affords him liberty of action.

THIRD, that we will individually send to the Administrator a full and complete schedule of the prices being charged for the products of this industry, giving terms and conditions of sale and any other pertinent details relative thereto, all of which shall be set forth in a form specified by the Administrator, and in sufficient number of copies so that all parties to this Agreement may be supplied, such copies to be mailed to the Administrator not later than forty-eight (48) hours (exclusive of Saturday and Sunday) after a date to be designated by the Administrative Agency.

FOURTH, that we will not induce or attempt to induce the breach of a contract between a competitor and his customer during the term of such contract.

FIFTH, that we will not defame a competitor by words or acts which untruthfully call in question his business integrity, his ability to perform his contracts, his credit standing, or the grade, quality or count of his goods.

SIXTH, that we will not interfere with a competitor's business through the enticement of employees from his employment.

SEVENTH, that we will not circularize threats of suit for infringement of patent or trade-mark among customers of a competitor.

EIGHTH, that we will not discriminate in price between purchasers of the commodities manufactured by us, sold for use, consumption, or resale, where the effect of such discrimination may be to substantially lessen competition or tend to create a monopoly in any line of commerce; provided, nothing herein contained shall prevent discrimination in price between purchasers of commodities on account of differences in the grade, quality or quantity of the commodity sold or that makes only due allowance for difference in the cost of selling or transportation, or discrimination in price in the same or different communities made in good faith to meet competition; and provided further, that nothing herein contained shall prevent any of us from selecting his own customers in bona fide transactions and not in restraint of trade, as outlined in the Second Article hereof.

NINTH, that for the purpose of preventing discrimination in price as defined in Article Eight hereof, we hereby adopt the following definitions:

Wholesaler or Jobber: An individual, partnership, association, corporation, establishment or other form of enterprise, whose principal function is the wholesaling of stationery and office equipment products, such sales being made to Retailers for resale. The term "principal function", is defined to mean, that such wholesale sales must amount to one-half or more in dollars, or to not less than $100,000.00 per annum, of such distributor's total sales of stationery and office equipment products, except where an individual, partnership, association, corporation, establishment or other form of enterprise cannot qualify under this definition, but does resell to Retailers to a lesser extent than stated above, in which event he may be included under the terms of this definition on purchases made of this industry's products which are resold to Retailers as evidenced by copies of invoices.

Retailer: One who buys the product for resale to the consumer.

Consumer: A purchaser who destroys the exchangeable value of the commodity, by use.

TENTH, that we will not sell the products of this industry below cost.

ELEVENTH, that we will not pay or make allowance of secret rebates, refunds credits or unearned discounts, whether in the form of money or otherwise, or extend to certain purchasers special services or privileges not extended to all purchasers under like terms and conditions.

TWELFTH, that we will not directly or indirectly give or permit to be given or offer to give money or anything of value to agents, employees, or representatives of customers or prospective customers or to agents, employees, or representatives of competitors' customers or prospective customers, without the knowledge of their employers or principals, as an inducement to influence their employers or principals to purchase or contract to purchase industry products from the maker of such gift or offer, or influence such employers or principals to refrain from dealing or contracting to deal with competitors.

THIRTEENTH, that we will not make or cause or permit to be made or published any false, untrue, or deceptive statement by way of advertisement or otherwise concerning the grade, quality, quantity, substance, character, nature, origin, size, or preparation of any product of the industry in any way that might have a tendency and capacity to mislead or deceive purchasers or prospective purchasers.

FOURTEENTH, that we will not ship or deliver products which do not conform to the samples submitted or representations made prior to securing the orders, without the consent of the purchasers to such substitutions.

FIFTEENTH, that we will not make a sale or contract for sale of any of the products of this industry, whether patented or unpatented, for use, consumption of resale, or fix a price charged therefor, or discount from, or rebate upon such price, on the condition that the purchaser shall not use or deal in the product of a competitor.

SIXTEENTH, that we will not ship products of this industry on consignment.

SEVENTEENTH, that as freight and trucking charges are necessarily reflected in price, and as the variable practice on the part of sellers, of requiring purchasers in some instances to pay such charges and in other instances of assuming such charges, causes unfair price discrimination, we will see to it that such charges are at all times included in prices quoted and/or charged by us for the product of this industry .

EIGHTEENTH, we will not make contracts of sale which permit the buyer to cancel or provide for a reduced price in the event of a market decline, and which do not permit the seller to cancel or provide for an enhanced price in the event of a market rise.

NINETEENTH, we will not ship merchandise into terri-

tories outside our normal territories, and sell such merchandise below the general market prevailing in such other territories into which shipments are made.

TWENTIETH, that we will not deliver over-runs of red rope expanding products free of charge, or at a concession in price.

TWENTY-FIRST, that all quoted prices will be on the basis of delivery upon completion of manufacture. If the buyer requests a postponement of the shipment beyond the date originally specified, a separate charge will be made to cover the full cost of warehousing the goods.

TWENTY-SECOND, that an accurate knowledge of costs is indispensable to intelligent and fair competition and the general adoption of accurate and uniform methods of cost finding and estimating as a means of correcting the various methods of unfair competition heretofore mentioned is strongly recommended.

TWENTY-THIRD, that

(a) In Five Piece products, the grades of paper used infront and back of the product will be designated "AA" and "A", the distinction consisting in the percentage of Rope or Jute Fiber content in the mill furnish. These grades will be constituted as follows:
"AA"—to contain at least 85 per cent Rope or Jute Fiber.
"A"—not to exceed 50 per cent Rope or Jute Fiber.

(b) In One Piece products, the grades will be designated "A", "B" and "C", the distinction consisting in the percentage of Rope or Jute Fiber content in the mill furnish. These grades will be constituted as follows:
"A"—In two thicknesses, the lighter weight will not exceed .011 inch and the heavier weight will not exceed .013 inch, neither caliper will exceed 50 per cent Rope or Jute Fiber.
"B"—In two thicknesses, the lighter weight will not exceed .011 inch and the heavier weight will not exceed .013 inch. Both will be confined to Wood Pulp content, containing no Rope nor Jute Fiber.
"C"—Will be constituted of so-called "Red Patch" Paper.

TWENTY-FOURTH, that we will individually adopt and insert in our published prices, definite terms of payment to cover all our sales and that no cash discount will be given in excess of two (2) percent. Such cash discount will be strictly limited to payments not later than the 15th of the month following the date of shipment.

TWENTY-FIFTH, that we will not make or accept a contract or order for any of our products which does not specify the exact quantity, quality and unit price of the products purchased and the ultimate date on which the final delivery on the same is to be made.

TWENTY-SIXTH, that we will not withhold from or insert in our invoices or any other of our records or books of account, any statement which will tend to make the record false, either wholly or in part.

TWENTY-SEVENTH, that we will not practice or countenance the claim that transactions entered into prior to the signing of this agreement demand any release from any of its provisions.

TWENTY-EIGHTH, that we will not directly or indirectly offer for sale, quote or sell any of our industry products, at a price or prices, or upon terms and conditions, other than those stated in our published price lists and terms and conditions of sale and changes therein or revisions thereof, published and filed by us, except to each other.

TWENTY-NINTH, that we will not brand, market or pack any of our products in any manner which might tend to deceive or mislead purchasers with respect to the brand, grade, quality, quantity, origin, size, material content or preparation of the product.

THIRTIETH, that

(a) Our books of record will be open to investigation by the Administrator at any time, so that he may know that each of us individually, is adhering to all of the provisions of this agreement; and further

(b) That upon any complaint by any party to this agreement, alleging failure by another party hereto, to comply in any detail with any of the provisions hereof, we will submit any or all of our pertinent books and records to an examination by the Administrator or such Certified Public Accountant as he may appoint, for the purpose of determining whether or not the complaint is justified;

(c) Further, that in the event such examination supports the allegations made, the manufacturer committing the infraction, will pay the cost of the examination, including traveling expenses and disbursements;

(d) Further, that in the event such an examination discloses no failure to comply in letter or in spirit, with the provisions hereof, then the expenses of the examination shall be borne by the manufacturer making the allegation.

THIRTY-FIRST, since the violation by a party hereto of any provision of this agreement will disrupt the normal course of fair competition in the industry and cause serious damage to others, and since it will be impossible accurately to determine the amount of such damage, we therefore adopt the following method of liquidating such damages:

1. Any party violating any provision of this agreement shall pay to the Treasurer of the Administrative Agency, upon determination of violation by the Administrator, or the impartial tribunal provided for in Article Thirty-two hereof, amounts as set forth below:

(a) For the violation of any provision of this agreement involving a transaction incidental to or connected with a sale of any product of the industry, an amount equal to twenty-five (25) per cent (but not less than Twenty-five ($25.00) Dollars of the actual selling price of the product sold in violation of such provision, or of the price at which the product should have been sold under the agreement, if determinable, whichever is the higher;

(b) For the violation of any provision of this agreement not involving a transaction incidental to or connected with a sale of any product of the industry, One Hundred ($100) Dollars.

2. All amounts so paid to or collected by the Treasurer of the Administrative Agency, under the provisions of this Article, shall be applied by him as follows: Distributed semi-annually among the parties to this agreement who have not been determined to have been guilty of a violation of a provision of this agreement during the preceding semi-annual period, on the basis of the ratio of the dollar volume of the business done by each of the said parties during the year 1934 of the total business done by all of them during the year 1934.

3. The Administrative Agency may waive liability for payment of liquidated damages for any violation it finds to have been innocently made and resulting to no material injury.

4. The Treasurer of the Administrative Agency, as an individual, and not as Treasurer, by accepting office, accepts the trust established by this contract and agrees to perform the duties of Trustee hereunder until his successor in office may have been appointed.

THIRTY-SECOND, that if any party to this agreement

having been adjudged by the Administrator as having been in violation of any of the provisions of the said agreement and subject to any of the liquidated damages, desires to appeal from this decision to an independent tribunal the Administrative Agency is empowered to select such tribunal. All incidental expenses connected with adjudication shall be borne by the party requesting such service.

THIRTY-THIRD, any one of the parties to this agreement may withdraw his signature therefrom upon giving due notice of such action to each of the other parties to the agreement and the Administrator, thirty (30) days prior to the effective date of such withdrawal.

THIRTY-FOURTH, that this agreement shall remain in force for a period of one (1) year from the date thereof, but only so long as the remaining parties thereto represent not less than seventy-five (75) per cent of the dollar volume of the business done by the entire industry during the calendar year 1934.

U. of M. To Open Paper Laboratory

ANN ARBOR, Mich., November 12, 1935.—Facilities for experimental work in paper making and wood pulp utilization will be provided in a new laboratory to be dedicated at the University of Michigan, November 15 and 16.

The new research centre, one of the few of its type in the country, is the joint gift to the university of paper manufacturers.

Occupying three large rooms in the new East Engineering building, the laboratory is equipped to make experimental batches of any paper product and to conduct research in a special air-conditioned room. It will be operated with the aim of providing manufacturers with technical advice in developing improved types of paper and related products.

At present complete for experimental purposes, the laboratory may add equipment to make and examine pulp wood products in semi-commercial quantities as the need arises in special research projects. Valuable training will also be provided for a number of advanced student assistants. Research will be directed by Professor Alfred H. White, head of the department of chemical engineering and Professor D. W. McCready.

Formal presentation of the new laboratory will be made at a banquet to be held on the evening of November 15, in the Michigan Union. Seventy-five representatives of Michigan paper making, pulp wood and supply firms will be present for the two-day opening.

Paper Shippers Dine at Dayton

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, November 11, 1935—Members of the Miami Valley Papers Shippers' Association held a dinner meeting in the Van Cleve hotel Tuesday night, it was announced by G. R. Braun, secretary, Middletown.

Twenty-three paper manufacturing firms comprise the membership of the association, representatives of which discussed trade practices and general business conditions here.

Hano Paper Corp. Expands

The Hano Paper Corporation of 47-04—31st Place, Long Island City, N. Y., although it moved only three months ago and at that time took one and a half times the old space it had previously, has been forced, by increase in business, to make a further addition to its premises and now has double the space the company had a year ago.

Now Thwing-Albert Instrument Co.

Dr. Charles B. Thwing, president and founder of the Thwing Instrument Company, of Philadelphia, Pa., makers of high grade pyrometer apparatus and paper testing instruments, announces that hereafter the company will be known as the Thwing-Albert Instrument Company.

This change is in name only, as it involves no change in ownership, management, policy, or product.

Edw. J. Albert whose name is joined with Dr. Thwing's name in the firm now, has been associated with this concern for the past 17 years as manager as well as being secretary of the company.

Dr. Thwing founded the business in 1906 and was a pioneer in the development and manufacture of high resistance pyrometer apparatus. Many patents were taken out by him for the temperature measuring and controlling equipment. These included indicating and recording pyrometers of both the daily chart and continuous chart styles and covered the field of electrical resistance thermometers measuring temperatures as low as minus 420 degrees Fahrenheit, thermoelectric pyrometers, and also radiation pyrometers to the high range of 5500 degrees Fahrenheit.

One among his many inventions was the automatic cold end compensator for pyrometers which is in such general use today.

In addition to its pyrometer business, about twenty years ago the company started the paper testing instrument department of the company, which due to the careful engineering and painstaking efforts in producing paper testing instruments, has grown rapidly producing such well known items as the Elmendorf Tearing Tester, the Thwing Basis Weight Scale, the Penescope, the Vapometer, the Thwing Portable pH Meter, Razek-Mulder Color Analyzer, the Thwing All-Purpose Tensile Tester, Formation Tester, White Water Sampler, Thwing Multiple Folding Endurance Tester, etc, etc.

The business of the company is now fairly evenly divided between the production of electrical measuring instruments and physical testing instruments.

The special instrument department is continually solving difficult problems for its clients by producing unique instruments, electrical and physical, for testing qualities or measuring quantities heretofore not done.

The main office and laboratory will, as before, be at 34th Street and Lancaster avenue, Philadelphia. Pa.

Canadian Newsprint Exports Up

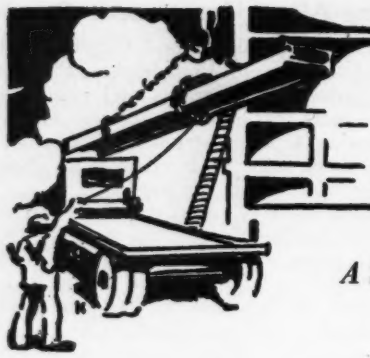
[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 11, 1935.—A report just issued by the Dominion Bureau of Statistics shows that the exports of newsprint, as compared with the similar period of last year, continue to increase. For September the exports amounted to 4,178,239 cwt., valued at $7,173,542, as compared with 3,815,886 cwt. valued at $6,569,041 in September, 1934.

For the six months ending September last, the exports amounted to 25,505,179 cwt. valued at $43,484,631, compared with 23,376,957 cwt. valued at $39,983,645 in the same period of last year.

Leading purchasers in September were: United States $5,623,545, Australia $412,805, Great Britain $394,708, Argentina $236,998, Japan $107,924, New Zealand $56,873, China $56,111, Chile $53,986, Peru $46,964, British South Africa $32,720, Brazil $24,822, Uruguay $21,257, Hong Kong, $17,707, Cuba $15,552. Altogether 32 countries bought Canadian newsprint in September.

Exports of pulp in September totalled 1,112,670 cwt., valued at $2,221.163, as compared with 1,024,471 cwt., valued at $2,123,673 in September 1934.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Indianapolis, Ind.—The Paper Package Company, 615-25 South Delaware street, manufacturer of paper boxes and containers, labels and other paper products, has concluded negotiations for purchase of building at Delaware and McCarty streets, heretofore known as the Fishback Building, comprising a five-story and basement structure with about 50,000 square feet of floor space. New owner will make alterations and improvements, and equip for new plant. Present factory will be removed to new location at early date and increased equipment installed for larger output.

Watervliet, N. Y.—The Behr-Manning Corporation, Tenth avenue, manufacturer of abrasive papers, etc., has approved plans for new addition to plant, to be three-story, 50 x 200 feet and 50 x 100 feet, estimated to cost over $125,000 with equipment. General contract has been awarded to Morton C. Tuttle Company, 31 St. James avenue, Boston, Mass., and superstructure will begin at early date. Company headquarters are at Troy, N. Y. It is a subsidiary of the Norton Company, Worcester, Mass.

Orange, Tex.—Officials of the Equitable Paper Bag Company, Scholes and Meserole streets, Brooklyn, N. Y., headed by Maurice Rosenfeld, president, have organized a new company under name Orange Pulp and Paper Corporation, to take over and operate former paper mill of Commercial Pulp and Paper Company, Orange, previously owned by the Yellow Pine Paper Mill Company, recently purchased, as lately noted in these columns. Improvements and alterations will be made at once; mill has been idle for a number of months and will be developed by new owner for an initial output of about 50 tons of kraft paper stock per day. Power plant will be improved and modernized, and new equipment installed. Mr. Rosenfeld will head new organization noted. Frederick L. Smith, 21 East 40th street, New York, N. Y., is engineer.

New York, N. Y.—The Acme Folding Box Company, 137 Wooster street, manufacturer of paper boxes and containers, has arranged for increase in capital stock from $50,000 to $100,000.

Roanoke, Va.—The Viscose Corporation of Virginia, Inc., manufacturer of cellulose rayon products, has approved plans for new one-story addition to local mill, 80 x 100 feet, to be used primarily for caustic soda reclaiming plant and for expansion in processing division. Contract has been let to the Virginia Bridge and Iron Company, Roanoke, for structural steel framing for new unit, for which superstructure will soon be placed under way. It will cost close to $100,000, with equipment. Company is a subsidiary of the Viscose Company of America, Inc., 200 Madison avenue, New York, N. Y., with main mill at Marcus Hook, Pa. H. C. Neren is manager at Roanoke mill.

Wisconsin Rapids, Wis.—The Consolidated Water Power and Paper Company will carry out construction by day labor for proposed new clay plant at Biron, near Wisconsin Rapids, recently referred to in these columns, to be used for clays for paper production. New unit will be three-story, 36 x 55 feet. Thomas Utegaard is company engineer in charge. Work is scheduled to begin at once.

Detroit, Mich.—The Art-Kraft Paper Products Corporation, 3123 Barium Tower Building, recently organized by William C. Laprade, address noted, and associates, is said to be planning operation of local plant for manufacture of special paper containers and kindred paper products.

Cincinnati, Ohio—The Formica Insulation and Lamination Company, 4620 Spring Grove avenue, manufacturer of sheet insulation products, laminated sheets, etc., has awarded general contract to the Ferro Concrete Construction Company, Third and Elm streets, for new two-story top addition to plant, totaling about 30,000 square feet floor space, to be used for expansion in manufacturing division. It will cost over $65,000, including equipment.

Waynesboro, Va.—The DuPont Rayon Company, manufacturer of cellulose rayon products, is said to be planning new additions to local plant, including improvements in present units, work to be carried out during 1936. Machinery will be installed for increased output. Entire project is reported to cost over $400,000 with equipment. Company engineering department will be in charge. Main offices are at 350 Fifth avenue, New York, N. Y.

New Orleans, La.—The Great Southern Wirebound Box Company, Southport, New Orleans, has completed construction of new plant on adjoining site for the manufacture of corrugated fibre boxes and containers, previously referred to in these columns, and will place unit in service at early date. It is said to be the first such plant of this kind in the city and will develop a large output, giving employment to about 100 persons. New plant is one-story, 100 x 400 feet, and represents an investment of close to $200,000, including machinery, the larger part of which was furnished by the Samuel L. Langston Company, Camden, N. J. Diboll & Owen, Ltd., New Orleans, architects, prepared plans for the plant. D. F. Dixon is president of company and Earl A. Richard, secretary and treasurer.

Fort Dodge, Iowa—The National Gypsum Company, 111 West Washington street, Chicago, Ill., manufacturer of gypsum sheet products, wallboard specialties, is considering extensions and improvements in branch plant at Fort Dodge, in connection with expansion program at different mills, lately referred to in these columns. It is proposed to install a new gypsum board mill unit at the Fort Dodge plant. Project will cost close to $100,000, with equipment. Plant was formerly the property of the Uni-

versal Gypsum and Lime Company, Chicago, recently acquired by the National company.

New Companies

Los Angeles, Cal.—Furniture Containers, Inc., has been incorporated with capital of 2000 shares of stock, no par value, to manufacture and deal in heavy corrugated fibre containers for furniture and allied service. The incorporators include R. D. and B. Graham. Company is represented by J. M. Wright, Citizens' National Bank Building, Los Angeles.

Buffalo, N. Y.—The Commerce Paper Company has filed notice of organization to deal in paper goods of various kinds. Company is headed by George A. Payne, 120 North drive, and Roy H. Nitterauer, 164 Woodward avenue, both Buffalo.

Chicago, Ill.—Service Industries, Inc., 220 West Austin avenue, has been organized with capital of 1000 shares of stock, no par value, to manufacture and deal in wood pulp and wood fibre products. The incorporators are Herbert C. and Thomas F. Dee.

Boston Paper Men Form Bowling League

Ten of the Boston paper houses have formed the Paper Trade Bowling league, the members of which meet every Tuesday evening at 6:30 o'clock at the Huntington Alleys. At each meeting contributions are made, which will defray the expenses of prizes and a banquet at the close of the season. The scores to date are as follows:

	Total Pin Fall	Won	Lost
Storrs & Bement Company	2579	7	1
Arnold Roberts Company	2621	5	3
Carter Rice & Co., Corp.	2441	5	3
Stimpson & Co., Inc.	2483	4	4
H. J. Dowd Co., Inc.	2439	4	4
Knight, Allen & Clark, Inc.	2352	4	4
Morgan L. Ellis & Co., Inc.	2406	3	5
Ginsburg Brothers	2517	2	6
D. F. Munroe Company	1145	0	4
A. M. Eaton Paper Company	1208	0	4

High String Team—462—Arnold Roberts.
High 3 String Team—1348—Arnold Roberts.
High Individual String—118—McGlone.
High 3 Individual String—303—Evans.

The results of the November 5 tournament follow:

Arnold Roberts	4	Morgan Ellis	0
Storrs & Bement	4	A. M. Eaton	0
H. J. Dowd	3	Ginsburg	1
Carter Rice	3	Stimpson	1
Knight Allen	2	D. F. Munroe	2

Schedule for Tuesday, November 12:

Team		Team
Carter Rice	vs.	H. J. Dowd
Morgan Ellis	vs.	A. M. Eaton
D. F. Munroe	vs.	Stimpson
Arnold Roberts	vs.	Ginsburg
Knight, Allen & Clark	vs.	Storrs & Bement

Ask Quota in Newsprint Importations

PORT ANGELES, Wash., November 9, 1935—Demanding a quota on foreign newsprint importation, the Pacific Northwest Pulp and Paper Mill Employees' association have issued strong protests against import conditions in a flood of letters to Cordell Hull, secretary of state.

The "letter drive" was the initial move in the association's fight to curb the depletion of American paper and pulp sales to Canadian mills. Resolution were approved at a mass-meeting here pointing out an increasing loss of business to Canadian concerns.

Prospect that the "letters" would spread to other sections of Washington where communities are largely dependent upon paper and pulp mill payrolls was voiced by Union leaders. T. T. Aldwell, chairman and John Sherman signed the resolution which appealed for a quota ample to permit yearly output of 1,500,000 tons newsprint by American mills.

Newsprint Price for 1936

MONTREAL, Que., November 11, 1935.—So far as present indications go, the price of newsprint during 1936 will be $41 per ton for New York and Chicago delivery, with differentials for other points. There has been no official announcement to this effect, but it is recognized that the action of the Great Northern Paper Company in accepting contracts at this figure offers a formidable obstacle to the proposed advance of $2.50 per ton on 1936 deliveries. If the new price prevails, it will offer no easing of the situation, as increased costs will move them above the extra dollar per ton, and the various newsprint companies will apparently be as far off as ever from securing any return for the capital invested in them. As matters now stand, publishers are getting the benefit of capital in newsprint enterprises for nothing, while at the same time Canada is witnessing the depletion of its forest resources without any compensating revenue return.

According to report from various pulp and paper companies, pulpwood cutting operations in the woods this winter will be on a somewhat larger scale than was the case a year ago. Depletion of woodpiles and the continued large consumption of newsprint are given as the reasons.

The Hon. J. A. McQuarrie, Minister of Lands and Forests for Nova Scotia, reports that shipments of 115 million feet of spruce lumber from Nova Scotia to the United Kingdom during 1935, constitute an all-time record. He stated that New Brunswick shipments had totalled 105 million feet and those of Quebec, formerly one of the leading spruce producing provinces in the empire, 68 million feet. H. R. Ponsette, Canadian Trade Commissioner at Liverpool, England, states that England has embarked on a housing scheme which will probably take another four years to complete, and until then enormous quantities of lumber will be required and this should present an excellent opportunity to shippers.

J. W. Youngchild Manager at Fort Edward

John Wesley Youngchild has been appointed manager of the Fort Edward, New York, mill of the International Paper Company. Mr. Youngchild goes to the International from Nekoosa-Edwards Paper Company where he was general superintendent of paper mill.

Mr. Youngchild began his business career with the Marinette and Menominee Paper Company. His next connection was with Nekoosa-Edwards for thirty-three years.

Mr. Youngchild was Mayor of Nekoosa for five years, and is second vice-chairman of the Northwest Division of the American Pulp and Paper Mill Superintendents Association.

An Indication of Better Business

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., November 12, 1935—Practically all of the Holyoke paper mills operated the full day yesterday, Armistice day, having secured the required permission. This is considered an indication of better business, and in some former years when a holiday followed a Sunday the mills closed down until the holiday was over.

Filer Fiber Co. Builds

FILER CITY, Mich., November 11, 1935—The Filer Fiber Company is building a new finishing room and is also enlarging the storage warehouse at its plant here to provide larger facilities in both the departments.

PAPER TRADE JOURNAL
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RAW MATERIALS ADVANCING

Indications are that the quotations on raw materials for the paper industry will be higher next year. It will be noticed in the Miscellaneous Markets Section on page 50 of this issue of the PAPER TRADE JOURNAL that the producers of chlorine have announced an increase of $3 per ton on tank car contracts for the coming year. The producers of bleaching powder also announce an advance of $2 per ton on contracts for 1936. Casein, kraft pulp and other raw materials are also showing a rising tendency. It seems not unreasonable to conclude from these signs that prices for paper may be higher in the not distant future.

CHEMICAL SHOW WILL DEMONSTRATE THE VALUE OF RESEARCH

The American Chemical Society will present an extensive and interesting pagent of products, entitled: "Children of Recovery," at the Fifteenth Exposition of Chemical Industries to be held the week beginning December 2, at the Grand Central Palace, New York City. Evidence that research pays, in spite of business conditions, will be demonstrated by the concrete evidence offered by more than one hundred different new products of research marketed in 1934-35. "Chemistry coordinates industry" and "chemistry catalyzes commerce" will be the headings under which this review of new products is presented. In each chemical exposition the space occupied by the American Chemical Society is a mecca for thousands of visitors, and the exhibit usually sounds a keynote in terms of the chemical industries as a whole. At the last exposition in 1933 the theme was "Children of Depression", and the display included the outstanding research accomplishments which had been brought forth during two of the worst years of the panic cycle. It will be interesting this December to see how "Children of Recovery" compare with the earlier generation. The heredity has some analogies, being in each case chemical research, but the environment shows marked difference. Environmentalists and hereditarians should have good cause for argument in a new field.

In addition to the displays of chemical products, exhibits of plant equipment and the machines used in the industry will be comprehensive and fascinating. Included in this field will be pressure and continuous vacuum filters, acid pumps, and a wide range of accessory equipment for each of the unit processes of chemical engineering. There will be dust proof mixers of various types and sizes. Variable speed transmissions, pulley units, and motor drives will be exhibited as part of what is claimed to be the most complete line of speed regulating and controlling equipment made in the world today. All of these units may be seen in operation. Manufacturing chemists will be interested in a device for measuring and checking the weight of materials from and to storage and for proportioning and blending any number of ingredients entering into the finished or semi-finished batch mix.

Distillation features will include a complete pilot plant unit, including all fittings and controls for process development. Following the Exposition this unit will be installed at the Brooklyn Polytechnic Institute. Such pilot plants are installed in representative university laboratories and industrial plants throughout the country. Another interesting part of the machinery display will be standard and special pumps to handle the most difficult pumping problems in about twenty different fields.

Metals and alloys will be featured in a number of distinct exhibits. Specially treated stainless steel will be shown as a new development enabling processing plants in the food and chemical industries to ship and store corrosive substances at a cost substantially less than would be the case if solid stainless steel containers were used. Another exhibit in the metals section is described as new, different, economical, and interesting alloys; also chemical and ceramic materials of titanium and zirconium for use in many phases of the chemical, metallurgical and ceramic fields. Platinum and the other precious metals will be showns in terms of all of their new technical and commercial uses.

Lead will be well represented by exhibits of all types of sheet lead, lead pipe, fittings, wire, rod and bar stock, also lead wool and examples of lead burning and welding. An exhibition in this field will call attention to the service of installation anywhere in the United States under the direction of expert lead burning engineers. Lead burning is said to be a highly specialized profession with the total number of highly competent men extremely small.

Materials handling is expected to provide many interesting exhibits. A new conveyor will be shown for handling dry bulk materials without dust and without contamination. The value of this conveyor in eliminating the danger of dust explosions and fire will be emphasized.

Protective coatings and chemical paints will be represented in many exhibits. Emphasis will be given to low-cost treatment for tripling the life paint on structural

steel. Among the special process exhibits will be chromodizing for protecting steel, electro-granodizing, a new method for rust proofing by phosphate coating; also treatments for making paint adhere to zinc and cadmium-plated steel, and to galvanized iron.

Trade Agreement with Canada

A treaty carrying into effect a reciprocal trade agreement between the United States and Canada will be signed within a few days at Washington and Ottawa, it was announced on Monday. Its effect will be, according to the President's statement, "to eliminate disagreements and unreasonable restrictions and thus work to the advantage of both Canada and the United States."

While the specific terms of the treaty at this writing have not been disclosed, it is believed that for certain concessions the United States in return will give Canada among other guarantees that of maintaining the status quo on articles now on the free list, including her three main items of export, namely, newsprint, pulpwood and wood pulp.

"Four commodities" says the *New York Times*, "in 1934 accounted for more than half of Canada's $222,000,000 exports to this country. These were newsprint, pulpwood, wood pulp and whisky. She was particularly anxious to get some sort of assurance that the first three would remain on the free list where they are today, and she is understood to have received that assurance in the agreement worked out between the President and Mr. Mackenzie King.

"In insisting upon this provision, Canada was not unmindful of the fact that every time a tariff or tax bill is presented to Congress, high tariff advocates from New England and other border line communities between the United States and Canada flock to Washington with petitions and demands for high duties on these commodities."

Glens Falls Mills Busy

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., November 11, 1935.—Paper mills this section are experiencing good business conditions with the outlook encouraging. The mills of Finch, Pruyn & Co. are running at 95 per cent of capacity with production estimated at about 146 tons of newsprint daily. The low point in the depression was reached in 1932 when about 68 per cent of capacity schedules were maintained. About a year ago the company rebuilt its entire pulp mill and at that time 426 hands were on the payrolls. Today 326 are working steadily with the majority employed in the paper mill. The company continues to obtain its pulpwood needs from a tract of over 200,000 acres of timberland in the Adirondacks, and for some time has been among the leading advocates of the reforestation movement.

At the mills of the Imperial Paper and Color Corporation employment is being given to about 800 persons and conditions are considered good. The wage level is also considered good, with many residents of neighboring villages finding steady employment.

To Demolish Old Black River Mill

BLACK RIVER, N. Y., November 9, 1935—The old St. Regis Paper Mill here has been purchased by the firm of Phillips & Byer, in addition to the large island on which the plant is located. It is expected that the new owners will use the site for an amusement park. The task of demolishing the once highly productive mill is now under way and about 100,000 tons of stone are being cleared away.

Production Ratio Report

The statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

1935	Total Production Ratio	1934	Total Production Ratio
January	65.8%	January	.....
February	70.0%	February	.....
March	70.5%	March	.....
April	70.0%	April	.....
May	69.4%	May	.....
June	72.3%	June	.....
July (b)	67.8%	July	.....
August	70.9%	August	.....
September (c)	75.0%	September (c)	59.4%
October	.....	October	64.7%
November	.....	November	61.7%
December	.....	December (a)	62.1%

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1935		CORRESPONDING WEEKS, 1934	
*October 5	75.2%	October 6	65.2%
*October 12	76.3%	October 13	64.3%
*October 19	75.0%	October 20	66.1%
*October 26	76.6%	October 27	63.5%
*November 2	75.6%	November 3	64.4%

The following statistics show the number of mills reporting by ratio groups:

NUMBER OF MILLS REPORTING CURRENT WEEKS

Ratio Limits	Oct. 5, 1935	Oct. 12, 1935	Oct. 19, 1935	Oct. 26, 1935	Nov. 2, 1935
0% to 50%	98	85	91	74	59
51% to 100%	247	260	248	259	173
Total Mills Reporting	345	345	339	333	232

* Subject to revision until all reports are received.
These data exclude (a)—Christmas Day, (b)—Fourth of July, (c)—Labor Day.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association per cents of operation, based on "Inch-Hours" were as follows:

1934	1935	1935	1935
Sept. ... 62%	Jan. 61%	May ... 61%	Sept. 7, 1935. 61%
Oct. ... 63%	Feb. ... 67%	June ... 65%	Sept. 14, 1935. 72%
Nov. ... 56%	March ... 67%	July ... 59%	Sept. 21, 1935. 71%
Dec. (a) 53%	April ... 61%	August . 65%	Sept. 28, 1935. 75%

Week ending October 5, 1935—75%
Week ending October 12, 1935—76%
Week ending October 19, 1935—75%
Week ending October 26, 1935—78%
Week ending November 2, 1935—76%

Sanitary Paper Mills Buy Property

HARTFORD, Conn., November 12, 1935—The Sanitary Paper Mills, Inc., of Burnside, East has acquired title to the mills on Forbes Street known as the Garvan Mills. The new owner has occupied the mill property for the past 10 years on lease from Thomas F. Garvan, Inc.

The property sold consists of 13 acres of land, water rights in the Hockanum River, a dam, the mill, two tenement houses and other buildings.

The Sanitary Paper Mills, Inc., manufactures facial tissues which are known under the trade name of Dovalette.

Attorney Frank B. O'Neill of Woodbury represented the Garvan company in the tranaction and Attorneys Robert L. Sengle and Leon A. Winslow represented the Sanitary Paper Mills, Inc.

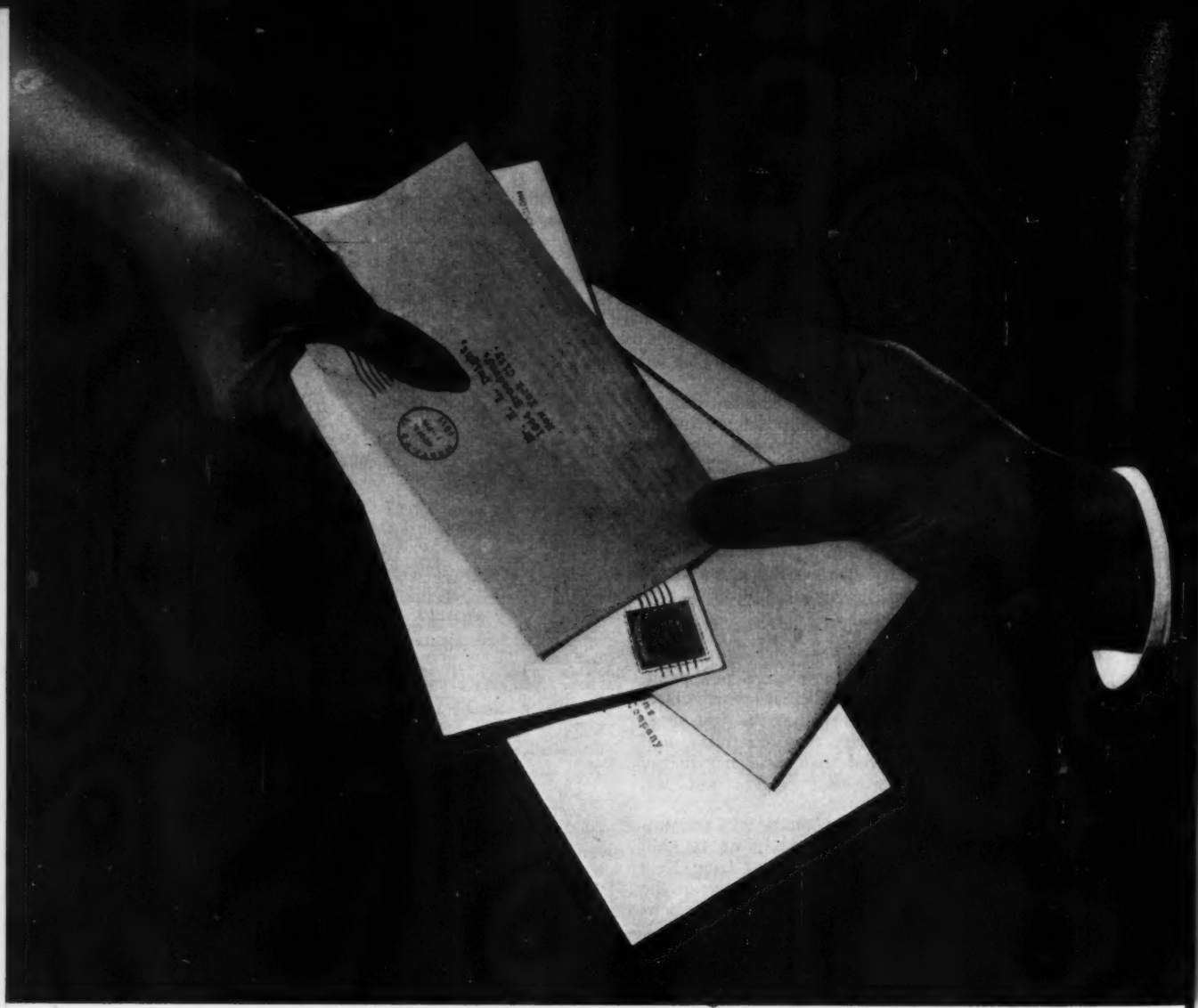
Loses Hand in Paper Machine Accident

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, November 11, 1935—Max Wise, 18, son of Mrs. M. J. Wise, N. Sutphin street, is at a hospital in Middletown reported in "good" condition after his right hand was amputated at the wrist following an accident several hours earlier at the Sorg Paper Company, Middletown, where he is employed in the machine room.

Wise was assisting other employees in putting a belt on a machine when he lost his balance, reached for support and is believed to have pushed his hand between the rolls.

The hand was so badly crushed that amputation was necessary, surgeons who examined him stated.



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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

A Study of the Relation of Some Properties of Cotton Rags to the Strength and Stability of Experimental Papers Made from Them*

By Merle B. Shaw, George W. Bicking, and Martin J. O'Leary [1]

Abstract

This article is one of a series on the stability of papers made from various fibrous raw materials. The present study is concerned with rag-fibre papers and the factors affecting their stability.

High-grade bond papers were made under carefully controlled conditions in the semicommercial paper mill of the Bureau from cotton rags of the qualities termed in the trade "new" (cuttings from unused textiles from textile and garment factories) and "old" (used textile materials, principally from homes.) Unsized, engine-sized and surface-sized papers were included. For most of the beater sizing, rosin size was used, being precipitated on the fibers in the usual way with papermakers' alum.

The basic rags, the half-stuffs made from them, and the finished papers were analyzed. The usual physical and chemical tests were made on the paper both before and after it had been subjected to an accelerated-aging test. The results demonstrate that stable paper can be obtained from new rags.

The data obtained confirm the general belief that high acidity resulting from excessive use of alum in rosin sizing has a marked deteriorating effect upon paper. The pH value for optimum results, as far as stability is concerned, was approximately 5.0 The degree of sizing at this acidity was also satisfactory.

Of papers of the same acidity, those having the lesser content of rosin were the more stable.

In general, surface sizing did not materially affect the life of base papers of high stability, although it seemed to serve as a protective surface retarding chemical deterioration of the less stable papers.

Initial quality of the fibres cannot be taken as a criterion of the degree of excellence of paper made from them. The study shows that careful processing of raw materials in respect of active chemical components (alum, rosin, etc.) is necessary for the manufacture of stable paper.

This report deals with a study of the effects of cellulosic impurities and of the papermaking processes on the strength and stability of rag papers. It is the third in a series of studies planned to include all the important types of fibrous raw materials commonly used in the manufacture of record papers.[2] The purpose of the investigation is to extend present information relative to the development of optimum qualities in papers prepared from each of the various fibrous raw materials, and the manner and extent to which the quality of the paper is affected by the raw materials and by the variations encountered in processing them. The plan of the investigation as a whole is stated in more detail in the first report.

Rag Fibers Used

Cotton rags of the qualities termed in the trade "new" and "old" were used in making the papers. New rags are cuttings from unused textiles and come largely from textile and garment factories, whereas old rags are used textile materials, and are principally waste products from homes. The rags employed were the grades known commercially as no. 1 white shirt cuttings, unbleached hosiery clippings, unbleached muslin, unbleached shoe cuttings, twos and blues, and no. 1 old whites. They were supplied by a commercial paper mill and had been sorted, cut, and dusted.

The rags were purchased as being representative of the respective grades. Analyses reported elsewhere herein of the various kinds of rags before they were submitted to the paper-making processes and also after they had been boiled, washed, and drawn out of weave (reduced to half-stuff) indicate the degree of cellulosic purity of the fiber and the extent to which the cellulose had been modified or degraded either in preliminary treatment or in actual preparation of the half-stuff.

The rag composition of the beater furnish, that is, the various kinds of half-stuff blended in the beater, is included in the data for each of the paper-machine runs.

* Research Paper RP794, Journal of Research, National Bureau of Standards.

[1] Staff of Bureau of Standards, Washington, D. C.

[2] For previous reports see *Highly-purified wood fibers as papermaking material*, BS J. Research 7, 765-782 (1931) RP372; also, *A study of some factors influencing the strength and stability of experimental papers made from two different sulphite pulps*, BS J. Research 11, 7-23 (1933) RP 574.

Papermaking Equipment

The equipment of the Bureau paper mill is adapted for making paper on a semicommercial scale under practical mill conditions. That employed in the manufacture of the rag papers included a rag cutter; duster; rotary boiler; 50-pound copper-lined wood-tub beater, having manganese-bronze bars and plate, and equipped with a washing cylinder; jordan refiner, with bars of a bronze and steel alloy; 4-plate screen; 29-inch fourdrinier papermaking machine, with wire 33 feet long and having two presses, nine 15-inch driers, a small machine stack of 7 rolls, and a reel; surface-sizing bath and drying cabinet; and a 5-roll supercalender.[3]

Preparation of the Half-Stuff

The procedure followed in the preparation of the half-stuff was essentially the same as that generally observed in the commercial production of high-grade papers.

CUTTING AND DUSTING

Since the rags employed in the tests had already been sorted as to material and color, the only mechanical treatment necessary to prepare them for the chemical cleansing was cutting and dusting.

BOILING OR "COOKING"

Chemicals Used

The grease, dirt, starch, sizing, or other impurities were rendered soluble or easily removable by boiling the rags in a chemical solution under pressure. The choice of agents generally used to effect these changes depends somewhat upon mill conditions and the grade and kind of paper to be produced. A mixture of lime and soda ash was used in this study.[4]

Either quicklime (calcium oxide) or hydrated lime (calcium hydroxide) may be used for cooking rags, but quicklime was employed in the present study. The following analysis[5] shows the composition of the lime,[6] which was ground to pass through a no. 100 sieve before analysis:

	Per cent
Loss on ignition	1.9
Insoluble siliceous matter (SiO_2, etc.)	0.5
Iron and aluminum oxides (R_2O_3)	0.4
Calcium oxide (CaO)	96.8
Magnesium oxide (MgO) not more than	0.4
Carbon dioxide (CO_2) not more than	1.9

The soda ash (Na_2CO_3) was 58 percent sodium oxide.

Cooking procedure

The constant factors for each cook were as follows:

Weight of bone-dry fiber	106 pounds
Volume of water	52.5 U. S. gallons (231 cu. in.)
Initial temperature	70 to 80 deg. F.
Duration of initial temperature	1 hour
Time for raising to cooking temperature	1 hour
Cooking temperature	250 to 260 deg. F.
Duration of cooking temperature	5 hours
Cooking pressure	30 to 40 pounds

The no. 1 white shirt cuttings, no 1 old whites, and twos and blues were each cooked separately. The unbleached hosiery, muslin, and shoe cuttings were mixed in equal parts and cooked together.

The amounts of chemicals used in the cooking liquor were varied according to the kind of rags being treated. For the new rags, 3 percent of lime and 1 percent of soda ash, based on the bone-dry weight of the rags, were employed; for the no. 1 old whites, 6 percent of lime and 1.5 percent of soda ash; and for the twos and blues, 8 and 2 percent, respectively. These percentages were recommended by a commercial paper company making high-grade rag papers.

In preparing the lime solution a portion of the total amount of water, 52.5 gallons, was used to slake the lime; the balance of the water and the soda ash were later added and thoroughly mixed with the slaked lime. The mixture was run through a no. 60 screen to remove sand, splinters of wood, coal particles, or other foreign material as it was charged into the boiler.

WASHING

When the cook was completed the boiler pressure was relieved and the liquor was allowed to drain off overnight. The cooked rags were then transferred to the beater and washed until the effluent was clear, to remove the cooking liquor and the loosened impurities. One-half of a cook constituted a beater charge. Fresh water was added continuously during the washing.

The time required for washing was about two hours for the no. 1 whites and the hosiery clippings, muslins, and shoe cuttings; about three hours for the no. 1 old whites and the twos and blues. The amount of water used was about 30 gallons per pound of new rags and about 45 gallons for the old. The temperature of the wash-water was 75 to 85 deg. F.

After the washing had continued for about one-half hour, or until the water discharged from the washer was fairly clear, the roll was partially lowered to the bed plate and the pressure was increased by lowering the roll at intervals thereafter during the washing process to further cleanse the rags and gradually brush them out of weave into threads and the threads into fibers.

BLEACHING

After the rags were reduced to half-stuff, an oxidizing agent was added to change the residual coloring materials or impurities into soluble or colorless substances. Bleaching powder, calcium hypochlorite, containing 35 percent of available chlorine, was the oxidizing agent used. The powder was thoroughly mixed with water and after being agitated for some time was allowed to settle. The clear liquor was then drawn off, analyzed, and subsequently used as needed.

The amount of bleaching powder required to attain the desired degree of whiteness varied with the color of the rags. The amount used, based on the oven-dry weight of the rags, was, for no. 1 white shirt cuttings, 0.1 to 0.2 percent; for unbleached hosiery clippings, muslin, and shoe cuttings, 0.3 to 0.5 percent; for no. 1 old whites, 1.0 percent; and for twos and blues, 2.0 percent.

The bleaching operation was begun in the washer (beater used as washer) and completed in the drainer. Before the bleach liquor was added to the half-stuff in the washer, water was removed from the washer to increase the concentration of the half-stuff. The bleach liquor was then slowly added and the stock was circulated for one hour. The temperature in the washer during this interval varied from 85 to 105 deg. F. The washer contents were then dropped into the drainer, as was also the fresh water subsequently used in washing out the beater, and left for one-half hour before the valve was opened and the water permitted to drain off. No acid or other material was added to accelerate the bleaching operation.

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[3] Photographs of the equipment employed are included in the following publications: *Caroa fiber as a papermaking material*, Tech. Pap. BS 21, 338-341 (1927) T340. *Further experimental production of currency paper in the Bureau of Standards paper mill*, BS J. Research 3, 904-905 (1929) RP121. *Equipment and research work of the Bureau of Standards paper mill*, Paper Trade J. 89, 19, 60-63 (1929).

[4] In previous experimental tests in the Bureau mill using caustic soda as the digesting chemical, papers of excellent quality were obtained. Caustic soda was not included in the present study, however, on advice of commercial papermakers, who thought its use unnecessary. It is not commonly used in cooking rags because its use is dangerous to workmen when mills are not properly equipped. Recent work by Edwin R. Laughlin, *Observations relative to the physical and chemical changes taking place in the cooking of new white rags*, Paper Trade J. 97, 17, 39-53 (1933), gives interesting data on the effects of different chemicals in the cooking of rags, including caustic soda and a comparison of calcium and magnesium limes.

[5] Made by Chemistry Division, National Bureau of Standards.

[6] The lime conforms to the chemical requirements of Bureau of Standards Circular C96, Recommended Specifications for Quicklime and Hydrated Lime for Use in the Cooking of Rags for the Manufacture of Paper.

The bleaching was followed by washing to remove residual chemicals and the soluble products of the bleaching action. The half-stuff in the drainer was covered with fresh water and thoroughly mixed, and allowed to stand for one hour before the drainer valve was opened. The process was later repeated and the half-stuff left to drain. All traces of active chlorine were removed in the washing, therefore no antichlor was used.

The divisions of the rags used in cooking—no. 1 white shirt cuttings; unbleached hosiery, muslin, and shoe cuttings; no. 1 old whites; and twos and blues—were maintained throughout all the processes. The corresponding lots of bleached half-stuffs were kept separate until blended in the beater.

Losses During Preparation of Half-Stuff

The total loss in weight of the various rags used in the preparation of the half-stuff—boiling, washing, and bleaching—based on the bone-dry weight of the rags, was as follows: no. 1 white shirt cuttings, 10 to 11 percent; mixture of the unbleached rags (hosiery, muslin, and shoe cuttings), 13 to 15 percent; no 1 old whites, 15 to 18 percent; and twos and blues, 18 to 21 percent.

Papermaking Processes

Beating

The method of beating the half-stuff to prepare it for forming a sheet on the paper machine followed very closely that described in a previous publication.[7] The characteristic feature of the method was the very gradual lowering of the beater roll.

Before the furnish was added to the beater, the roll was raised off the plate in order to give clearance to the lumps of half-stuff. The tub was partially filled with water, half-stuff from the drainers was introduced, and additional water was run in until the desired concentration was obtained. After some circulation of the furnish the roll was gradually lowered, by definite amounts and at fixed intervals, to brush out the fibers and reduce them to optimum length. The various positions of the roll and the time intervals for each during the beating of a furnish are given in Table I for both new and old rags, and are representative of the beating procedure.

TABLE I.—SCHEDULE OF ROLL SETTINGS FOR BEATING

New rags			Old rags		
Beating interval		Position of roll [a]	Beating interval		Position of roll [a]
hr.	min.		hr.	min.	
0	0	+10[b]	0	0	+10[b]
0	5	+10[c]	0	5	+10[c]
0	15	+6	0	15	+6
0	45	+5½	0	45	+5½
1	15	+5	1	15	+5
1	30	+4½	1	30	+4½
1	45	+4	1	45	+4
2	00	+3½	2	00	+3½
2	15	+3	2	15	+3
2	30	+2½	2	30	+2½
2	45	+2	3	00	+2
3	00	+1½	3	30	+1½
3	15	+1	4	00	+1
3	30	+½	4	30	+½
4	30	+½	5	00	+½
5	30	0	5	30	+½
6	30	0			
7	30	−½			
8	00	−½			

[a] Expressed in turns of the handwheel with which the position of the roll relative to the bedplate is changed. At zero setting the bedplate is just barely cleared. One turn of the handwheel raises or lowers th roll 0.008 inch. [b] Lighter-bar up. [c] Lighter-bar down.

The duration of the beating and freeness readings indicating the rate at which water flowed through or from the pulp sample are given for each paper-machine run in Table IV. The freeness data are for the stuff (beaten half-stuff) at the time of running into the stuff chest at the completion of the beating. The concentration of fiber in the test samples was 0.2 percent and the temperature 80 deg. F.

For more detailed description and discussion of the beating technic the reader is referred to the Bureau's Technologic Paper T329,[8] pages 96 to 102.

Paper-Machine Operation

From the stuff chest the stuff was pumped in a continuous stream through the stuff box and the jordan refiner to the paper machine. Pumping the stock from the jordan directly to the paper machine is considered better practice than discharging it into a machine chest and subsequently withdrawing it as needed. By the former method, changes in the character of the stock indicated as desirable by conditions at the screen, on the paper machine, or in the finished sheet can be effected rapidly by suitable adjustments of the jordan.

The operation of the paper machine was carefully controlled during the tests. For additional details of the operation see Bureau Technologic Paper T329, pages 102 and 103.

Sizing

Practically all the commonly used varieties of rag papers are sized to improve the writing or printing quality, or various other properties. For some of the papers manufactured in this study, sizing agents were introduced into the beater and precipitated on the fibers (beater sizing); and in some experiments the surface of the paper also was impregnated with a sizing material after manufacture (surface sizing).

Beater Sizing

Rosin and starch were each used as sizing agents. The rosin size contained about 33 percent of free rosin, and was precipitated on the fibers in the beater with aluminum sulphate (papermaker's alum) in the usual manner. The starch was a commercial beater starch prepared by an oxidation process, and was used in accordance with current commercial practice as far as possible.

In preparing the starch mixture one part of starch was allowed to soak for about one-half hour in five parts of cold water, after which time the mixture was warmed to between 170 and 175 deg. F., while stirred continuously. It was kept at this temperature until the starch had swollen to the proper extent, and then was cooled. When used with rosin size, the starch was added to the beater after the rosin size and before the addition of the alum. When used alone, the starch was added at the same stage of the beating.

Surface Sizing

For surface sizing, glue and starch were each used. The glue was a high-grade hide glue with 331-grams jell strength, 87-millipoises viscosity, and 6.2 pH value.[9] The sizing bath was a 4-percent solution containing alum, and was maintained at approximately 130 deg. F. The paper was passed through the heated solution, then between a pair of squeeze rolls to remove excess sizing solution, and dried in a festoon drier at a temperature of 110 to 120 deg. F. The desired finish was imparted to the paper by supercalendering.

The procedure for surface sizing with starch was essentially the same as that for sizing with glue, except that no alum was added. A commercial starch prepared by a process of oxidation was used. In preparing the sizing

[7] *Research on the production of currency in the Bureau of Standards experimental paper mill*, Tech. Pap. BS 21, 96-97 (1926) T329.

[8] See footnote 7.

[9] Division of Tests and Technical Control, U. S. Government Printing Office, Washington, D. C.

solution, one part of starch was allowed to soak for one-half hour in four parts of cold water, and the mixture was then heated to 170 deg. F. When proper swelling had taken place, sufficient water was added to make a 4-percent solution.

Test Methods

The physical and the chemical tests were made in accordance with the official paper-testing methods[10] of the Technical Association of the Pulp and Paper Industry. The pH was determined electrometrically, using a quinhydrone electrode.

The relative stability of papers cannot be determined by analysis of the original papers alone. Too little is definitely known of the effect of any given combination of components on the aging of paper. Therefore, the pertinent physical and chemical tests were applied not only to the original papers but to samples that had been submitted to an accelerated-aging test as well. This test is made at the Bureau by exposing specimens of paper to air at a temperature of 100 deg. C. for 72 hours, and then determining to what extent the paper has been altered in folding endurance, tearing strength, alpha cellulose content, and copper number. A marked decrease in alpha cellulose (unmodified cellulose) content and increase in copper number (a measure of degraded cellulose) are considered indicative of deterioration. A high degree of resistance to change in the heat test, particularly with respect to folding strength and alpha cellulose content, as well as copper number, are regarded as favorable indications of permanence. For further details of this test the reader is referred to previous discussions of the method.[11] Although the test is only empirical and the time relation to natural aging is not known, Rasch and Scribner[12] found that results obtained by the test corroborated those obtained after a 4-year period of natural aging in differentiating the stability of papers.

Analyses of Rags and Half-Stuffs Used

Analyses showing the purity of the various grades of rags used and the half-stuffs made from them are given in Tables II and III. The fiber samples were converted into disintegrated form before being submitted to the alpha cellulose and copper-number tests.

TABLE II.—CHEMICAL-TEST DATA ON RAGS USED

Types of rags	Alpha cellulose content, Per cent	copper number	Ash, Per cent
Hosiery clippings	98.2	0.18	0.44
Mulsin	91.3	3.57	.62
Muslin after being washed with boiling water	96.9	.20	.1
Shoe cuttings	90.9	.73	2.75
No. 1 white shirt cuttings	97.3	.32	3.33
No. 1 old whites	90.9	1.28	.74
Twos and blues	89.0	1.67	1.37

It will be noted in Table II that the muslin rags originally had a high copper number, no doubt due to filler or loading material in the cloth. The material was apparently easily removed however, since, after being washed with boiling water, the rags had a high alpha cellulose content and a low copper number. The new rags were higher in cellulosic purity and were stronger than the old rags. Old rags are inherently less strong and of lower cellulosic purity because of the usage and repeated laundering of them.

The values given in Table III show the degree of purity of the half-stuffs and the extent of modification of the cellulose in their preparation. The relative quality of the rags is reflected in the half-stuffs and, as will be seen later, in the papers made from them.

TABLE III.—CHEMICAL TEST DATA ON BLEACHED HALF-STUFFS MADE

Half-stuff	Cook number	Alpha cellulose content, Per cent	Copper number	Ash, Per cent
Hosiery, muslin, and shoe cuttings	440	96.7	0.26	0.14
Do	441	97.1	.22	.16
Do	446	97.2	.19	.19
Do	451	97.7	.21	.15
Do	452	97.3	.22	.12
No. 1 white shirt cuttings	439	96.0	.34	.14
Do	442	96.1	.24	.12
Do	445	96.2	.29	.10
Do	449	96.3	.25	.10
Do	450	96.8	.25	.18
No. 1 old whites	458	90.8	.67	.48
Do	460	90.9	.76	.33
Do	462	91.2	.67	.44
Do	466	91.0	.76	.23
Twos and blues	457	86.1	1.46	.38
Do	459	85.3	1.60	.25
Do	461	87.4	1.20	.69
Do	463	84.3	1.70	.19

Data on Papers Made

Data relative to the beater furnish, beating time, and condition of the beaten stock for each paper-machine run, and various measurements on the papers are given in Table IV.

After preliminary runs (nos. 991 to 993), in which beating time was varied to determine the optimum beating conditions, an eight-hour beating, with the method of roll manipulation given in Table I, was adopted as suitable to produce a high-grade commercial-type writing or bond paper from the new rags. This time was used for practically all subsequent runs on new rags. As a result of previous work in the Bureau mill on old rags, five and one-half hours was used for them.

The condition of the fibers at the head box, that is, as the stock was ready to go over the wire of the paper machine, is shown in the photomicrographs, Figs. 1 and 2. Fig. 1 is representative of the stock prepared from new rags, and shows the fibers to be long, clean, and well brushed out. It will be noted that this condition was not destroyed by the jordanning. Fig. 2 shows the fibers of the stock prepared from the old rags to be shorter, more broken, and less fibrillated, as would be expected. The photomicrographs were made at a magnification of 100 diameters.

Unsized Papers

A series of runs of unsized papers in which the amount of alum added was varied were made to determine the effect of acidity on the stability of the papers. Tests were made on both original and heat-treated samples to determine the probable permanence of the papers. The test data are given in Table IV, but the relative effects of increasing amounts of alum are shown more clearly in Fig. III and IV. The measurements on the heat-treated samples show that the folding endurance, tearing strength, and alpha cellulose content decrease as the acidity increases, and that the copper number increases. Fig. 9 indicates that the addition of alum alone does not decrease the initial folding endurance of the paper, however.

The was no appreciable yellowing of the unsized papers in the 72-hour heat treatment at 100 deg. C.

Although there was a difference in the folding endurance

[10] Copies of the methods can be secured from the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York, N. Y.

[11] *Accelerated-aging test for paper*, BS J. Research 7, 465-475 (1931) RP352. Also, *Estimating stability of paper by heating*, Paper Trade J. 95, 4, 28-30 (1932). Also, for previous reports, see *Highly-purified wood fibers as papermaking material*, BS J. Research 7, 765-782 (1931) RP372; *A study of some factors influencing the strength and stability of experimental papers made from two different sulphite pulps*, BS J. Research 11, 7-23 (1933) RP574.

[12] *Comparison of natural aging of paper with accelerated aging by heating*, BS P. Research 11, 727-732 (1933) RP620.

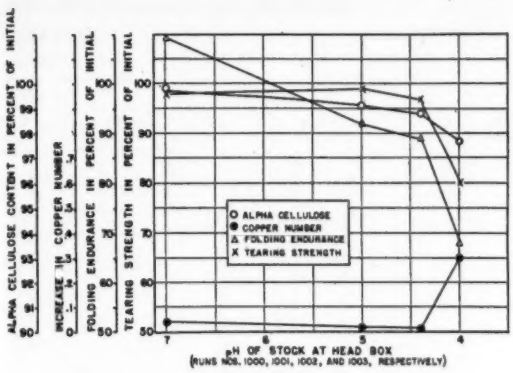
ALPHA CELLULOSE CONTENT IN PERCENT OF INITIAL
INCREASE IN COPPER NUMBER
FOLDING ENDURANCE IN PERCENT OF INITIAL
TEARING STRENGTH IN PERCENT OF INITIAL
O ALPHA CELLULOSE
● COPPER NUMBER
Δ FOLDING ENDURANCE
X TEARING STRENGTH
pH OF STOCK AT HEAD BOX
(RUNS NOS. 1000, 1001, 1002, AND 1003, RESPECTIVELY)

FIG. 3.
Effect of acidity on stability of unsized new-rag papers.

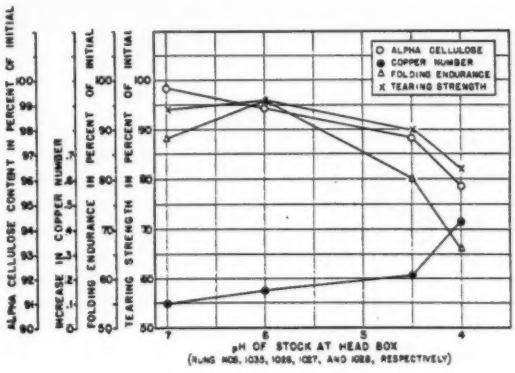
ALPHA CELLULOSE CONTENT IN PERCENT OF INITIAL
INCREASE IN COPPER NUMBER
FOLDING ENDURANCE IN PERCENT OF INITIAL
TEARING STRENGTH IN PERCENT OF INITIAL
O ALPHA CELLULOSE
● COPPER NUMBER
Δ FOLDING ENDURANCE
X TEARING STRENGTH
pH OF STOCK AT HEAD BOX

FIG. 4.
Effect of acidity on stability of unsized old-rag papers.

in the machine and cross directions of the experimental papers made from new rags, this condition appears to be common to all papers made from cotton rags, as is also generally the case with other fibers. The commercial unsized papers tested showed the same lack of uniformity. The surface sizing, however, tends to even the folding endurance in the two directions of the sheet.

The folding endurance of some of the heat-treated papers was greater than that of the corresponding original papers. This has been noted by other observers also, not only for heat-treated papers but for papers after natural aging as well. The cause of this seeming inconsistency is probably that the papers were tested too soon after being made; they had not had time to reach a state of equilibrium.

In general, the agreement between the pH values of the water from the stock at the head box and of the extract of the finished paper was fairly good. The greater differences were noted around the neutral point; closer checks were obtained at the lower pH values. Since the completion of the tests it has been found that around the neutral point, better agreement is obtained with a glass electrode. In future work a glass electrode will be used when the pH approaches 7.

BEATER-SIZED PAPERS

In studying the effect of rosin size on the properties of the rag papers a number of machine runs were made in which the amounts of alum and rosin size used were varied, while the factors involved in the mechanical operation of the beater and paper machine were kept constant. The

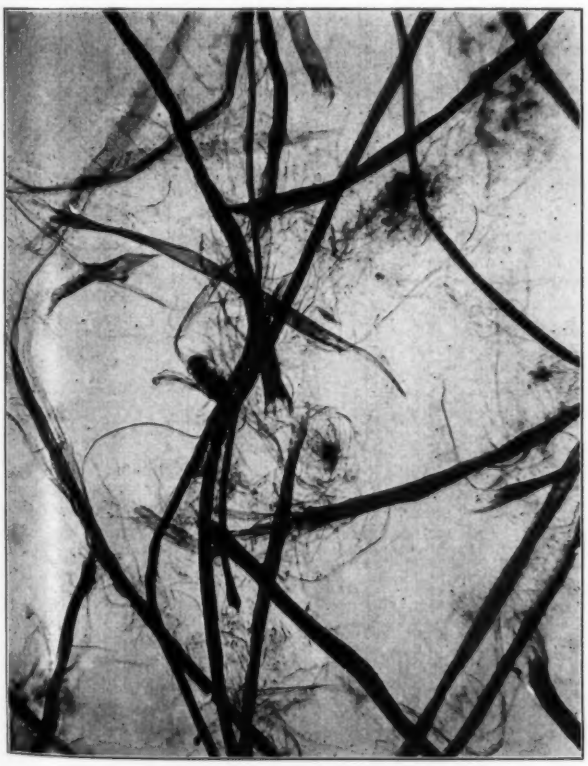

FIG. 1. NEW RAG FIBER, x 100.
Stock from head-box, machine run No. 1,013.

FIG. 2. OLD RAG FIBER, x 100.
Stock from head-box, machine run, No. 1,032.

TABLE IV.—DATA ON UNSIZED, BEATER-

PAPERS MADE

Run number		Beater furnish: Fiber composition		Beater furnish: Sizing materials (amount based on dry fiber)			Freeness			Surface-sizing solution			Physical tests				Folding endurance [4]		Breaking load [5]	
Paper machine	Surface sizing	Unbleached rags; twos and blues [1], Per cent	Shirt cuttings; old whites [2], Per cent	Rosin, Per cent	Starch, Per cent	Alum, Per cent	Beating interval, Hours	After beating	At head box	Acidity of stock at head box, pH	Glue, Per cent	Starch, Per cent	pH value	Weight: 25 by 40 inches, 500 sheets, Pounds	Bursting strength, Points [3]	Ratio of bursting strength to weight, Percent	Thickness, Inch	Machine direction, Double folds	Cross direction, Double folds	Machine direction, Kilograms	Cross direction, Kilograms
991	...	50	50	..	..	..	9	42	14	....	..	..	....	57.0	32	56.1	0.0036	2,900	1,400	7.5	4.3
991	271	50	50	..	..	..	7	78	26	....	4	..	±4.5	55.5	54	97.4	.0035	4,400	4,000	11.0	6.0
992	...	50	50	..	..	..	7	78	26	....	..	..	....	56.4	31	55.0	.0036	3,500	1,100	7.1	4.3
992	272	50	50	..	..	..	13	66	30	....	4	..	±4.5	56.7	58	102.1	.0035	4,400	5,200	10.1	6.6
993	...	50	50	..	..	..	13	66	30	....	..	..	....	53.2	31	58.3	.0035	4,300	2,000	6.8	3.9
993	273	..	..	..	..	..	14	32	21	....	4	..	±4.5	58.0	61	105.0	.0035	5,500	5,400	11.6	6.8
995	...	100	..	..	..	..	14	32	21	....	..	..	....	59.2	35	59.0	.0035	6,300	2,400	8.0	4.2
998	...	100	..	..	..	..	9	52	25	....	..	..	....	58.2	36	61.8	.0037	5,200	2,300	8.2	4.5
998	274	..	..	..	..	..	..	..	..	....	4	..	±4.5	59.1	56	94.8	.0034	5,700	5,000	11.6	6.0
1,015	...	100	..	2	..	1.5	9	62	31	±5.0	..	..	....	56.6	30	53.0	.0036	2,700	720	7.3	4.3
1,015	284	..	..	..	..	..	..	..	..	....	4	..	±4.5	57.7	50	86.5	.0033	5,200	3,500	9.4	5.8
996A	...	..	100	..	..	..	10	52	23	....	..	..	....	57.1	34	59.5	.0037	4,200	2,100	7.4	4.4
996B	...	..	100	..	..	1.5	10	52	23	±5.0	..	..	....	54.1	30	55.5	.0035	2,400	930	6.9	4.1
999	...	..	100	..	..	..	7	68	31	....	..	..	....	56.6	33	58.3	.0038	3,000	820	7.4	4.2
1,014	...	..	100	2	..	1.5	7	66	30	±5.1	..	..	....	56.5	31	54.9	.0037	1,200	440	6.9	4.4
1,014	285	..	..	..	..	..	..	..	..	....	4	..	±4.5	58.4	50	85.6	.0035	3,200	1,600	9.7	6.1
1,001	...	50	50	..	..	.6	8	53	26	±5.0	..	..	....	56.6	32	56.5	.0036	4,000	1,200	7.5	4.1
1,001	275	50	50	..	..	..	8	53	26	....	4	..	±4.5	57.9	57	98.5	.0035	4,800	4,100	11.4	6.1
1,002	...	50	50	..	..	1.2	8	54	24	±4.4	..	..	....	58.1	32	55.0	.0037	3,900	1,500	7.4	4.2
1,002	276	50	50	..	..	..	8	54	24	....	4	..	±4.5	59.8	57	95.4	.0035	4,700	4,600	11.8	6.3
1,003	...	50	50	..	..	2.1	8	53	28	±4.0	..	..	....	58.1	32	55.0	.0036	3,600	1,400	7.4	4.2
1,003	277	50	50	..	..	..	8	53	28	....	4	..	±4.5	59.0	55	93.2	.0036	4,300	4,500	11.0	6.3
1,004	...	50	50	2	..	.9	8	62	28	±6.1	..	..	....	56.0	31	55.4	.0035	2,400	1,100	7.0	4.5
1,004	278	50	50	2	..	1.1	8	58	28	±4.9	4	..	±4.5	57.8	50	86.5	.0036	4,500	3,400	9.3	5.7
1,005	...	50	50	2	..	1.7	8	58	32	±4.4	..	..	....	57.2	32	56.0	.0036	2,500	740	7.4	4.4
1,005	279	50	50	2	..	..	8	58	32	....	4	..	±4.5	58.9	46	78.0	.0035	3,400	2,400	9.5	5.8
1,006	...	50	50	2	..	2.9	8	62	28	±4.0	..	..	....	55.6	32	57.5	.0037	1,900	580	7.3	4.6
1,006	280	50	50	2	..	..	8	62	28	....	4	..	±4.5	59.7	52	87.0	.0035	3,200	2,100	9.9	5.8
1,007	...	50	50	..	5	.6	8	59	28	±5.0	..	..	....	55.6	31	55.7	.0036	1,500	590	7.0	4.0
1,007	281	50	50	..	5	..	8	59	28	....	4	..	±4.5	57.9	52	90.0	.0035	3,500	2,500	10.1	6.0
1,008	...	50	50	1	5	.9	8	65	30	±5.0	..	..	....	55.7	39	70.0	.0035	4,800	3,600	8.5	5.2
1,008	282	50	50	1	5	..	8	65	30	....	4	..	±4.5	58.8	61	103.8	.0035	4,800	5,000	11.7	5.9
1,009	...	50	50	..	..	..	8	52	22	±7.0	..	..	....	55.1	41	74.4	.0036	3,200	3,000	8.2	5.2
1,009	283	50	50	..	..	..	8	52	22	....	4	..	±4.5	60.3	58	96.3	.0035	5,300	4,700	11.2	6.5
1,000	...	..	..	..	..	..	..	..	..	....	..	4	±7.1	55.3	29	52.5	.0035	3,100	740	7.1	3.8
1,000	286	..	..	..	..	..	..	..	..	....	4	..	±4.5	57.9	56	96.8	.0034	4,300	3,400	10.0	5.5
1,000	289	..	..	..	..	..	..	..	..	....	..	4	±7.1	56.0	48	85.8	.0034	4,600	2,500	9.4	5.2
1,012	...	50	50	½	..	.8	8	59	25	±5.0	..	..	....	56.6	32	56.5	.0035	3,300	1,700	7.1	4.5
1,012	287	..	..	..	..	..	..	..	..	....	4	..	±4.5	57.3	60	104.8	.0034	5,200	4,400	11.0	6.5
1,012	290	..	..	..	..	..	..	..	..	....	..	4	±7.1	58.0	52	89.6	.0035	5,300	3,700	9.8	6.1
1,013	...	50	50	1	..	1.0	8	61	22	±5.0	..	..	....	56.1	29	51.6	.0036	2,600	1,100	7.1	4.4
1,013	288	..	..	..	..	..	..	..	..	....	4	..	±4.5	58.1	54	93.0	.0034	4,900	4,000	9.9	6.3
1,013	291	..	..	..	..	..	..	..	..	....	..	4	±7.1	58.7	49	83.5	.0035	5,300	2,900	9.1	5.7
1,038	...	50	50	2	..	1.6	6	102	48	±5.0	..	..	....	54.9	27	49.2	.0038	1,300	190	6.7	3.6
1,038	309	50	50	2	..	1.6	5	113	60	±4.9	4	..	±4.7	57.0	50	87.6	.0035	3,500	2,300	9.8	5.3
1,039	...	50	50	2	..	1.6	5	113	60	....	..	..	....	55.1	29	52.5	.0037	1,300	220	6.9	3.5
1,039	310	(*)	(*)	2	..	1.6	8	69	35	±5.1	4	..	±4.7	56.1	48	85.5	.0035	3,900	1,500	9.7	5.4
1,040	...	[10] 50	[10] 50	2	..	1.6	8	68	42	±4.9	..	..	....	55.1	30	54.5	.0038	2,500	330	7.3	3.9
1,040	311	..	..	..	..	..	..	..	..	....	4	..	±4.7	59.0	49	83.0	.0035	3,700	1,800	9.6	5.7
1,041	...	50	50	2	..	1.6	8	68	42	±4.9	..	..	....	56.7	27	47.6	.0037	1,700	200	6.8	3.9
1,041	312	..	..	..	..	..	..	..	..	....	4	..	±4.7	59.2	50	84.5	.0036	3,300	1,500	9.3	5.9

PAPERS MADE

1,025	...	50	50	..	..	..	5.5	80	45	....	..	..	....	54.0	21	38.9	.0039	24	19	4.5	3.2
1,026	...	50	50	..	..	1.5	5.5	79	44	±6.0	..	..	....	54.5	20	36.7	.0040	28	16	4.8	2.8
1,027	...	50	50	..	..	1.8	5.5	86	44	±4.5	..	..	....	54.7	20	36.6	.0039	28	13	4.7	2.7
1,027	292	..	..	..	..	..	..	..	..	....	4	..	±4.7	58.0	36	62.0	.0036	115	84	7.1	4.9
1,028	...	50	50	..	..	2.8	5.5	93	42	±4.0	..	..	....	55.0	19	34.6	.0040	25	16	4.5	3.2
1,028	293	..	..	..	..	..	..	..	..	....	4	..	±4.7	58.0	37	63.9	.0037	92	106	6.7	5.2
1,029	...	50	50	2	..	1.3	5.5	91	43	±6.4	..	..	....	55.1	20	36.3	.0040	31	14	4.5	2.7
1,029	294	..	..	..	..	..	..	..	..	....	4	..	±4.7	56.0	32	57.1	.0036	106	52	6.6	4.1
1,030	...	50	50	2	..	1.8	5.5	96	46	±4.8	..	..	....	56.7	19	33.5	.0040	25	13	4.7	2.8
1,030	295	..	..	..	..	..	..	..	..	....	4	..	±4.7	57.9	32	55.3	.0037	98	57	6.4	4.6
1,031	...	50	50	2	..	2.1	5.5	99	47	±4.4	..	..	....	55.1	19	34.5	.0040	20	14	4.4	2.9
1,031	296	..	..	..	..	..	..	..	..	....	4	..	±4.7	56.8	28	49.3	.0038	41	34	5.5	4.2
1,032	...	50	50	2	..	3.1	5.5	105	56	±4.0	..	..	....	55.5	19	34.2	.0040	20	13	4.1	2.7
1,032	297	..	..	..	..	..	..	..	..	....	4	..	±4.7	57.0	28	49.1	.0039	47	35	5.6	4.3
1,033	...	50	50	..	5	1.3	5.5	100	52	±4.8	..	..	....	54.7	24	44.0	.0041	48	38	5.0	3.4
1,033	298	..	..	..	..	..	..	..	..	....	4	..	±4.7	60.3	38	63.0	.0039	151	129	7.1	5.3
1,034	...	50	50	1	5	1.5	5.5	103	48	±4.8	..	..	....	57.0	23	40.4	.0044	57	32	5.5	3.6
1,034	299	..	..	..	..	..	..	..	..	....	4	..	±4.7	58.0	36	62.0	.0039	131	93	6.8	4.9
1,035	...	50	50	..	..	..	5.5	92	42	+7.	..	..	....	53.0	21	39.6	.0038	33	26	4.6	3.1
1,035	300	..	..	..	..	..	..	..	..	....	8	..	±4.7	60.2	42	69.8	.0040	95	152	7.4	6.0
1,035	303	..	..	..	..	..	..	..	..	....	4	..	±4.7	56.6	34	60.0	.0038	78	93	6.7	5.0
1,035	306	..	..	..	..	..	..	..	..	....	..	4	±7.2	58.4	31	53.1	.0039	53	78	6.3	4.5
1,036	...	50	50	½	..	1.5	5.5	99	50	±5.1	..	..	....	54.6	20	36.6	.0041	28	18	4.8	2.8
1,036	301	..	..	..	..	..	..	..	..	....	8	..	±4.7	63.9	45	70.5	.0042	139	143	8.7	6.0
1,036	304	..	..	..	..	..	..	..	..	....	4	..	±4.7	57.0	36	63.1	.0039	66	68	6.7	4.6
1,036	307	..	..	..	..	..	..	..	..	....	..	4	±7.2	59.7	30	50.2	.0040	60	45	6.0	4.3
1,037	...	50	50	1	..	1.6	5.5	93	50	±5.1	..	..	....	54.2	20	36.9	.0040	23	14	4.6	2.5
1,037	302	..	..	..	..	..	..	..	..	....	8	..	±4.7	62.1	40	64.5	.0040	90	71	8.3	5.4
1,037	305	..	..	..	..	..	..	..	..	....	4	..	±4.7	56.5	32	56.6	.0040	77	65	6.8	4.3
1,037	308	..	..	..	..	..	..	..	..	....	..	4	±7.2	55.9	28	50.1	.0038	49	30	5.7	3.6

[1] New rags were mixture of unbleached rags (hosiery, muslin, and shoe cuttings); old rags were twos and blues. [2] New rags were No. 1 white shirt
15 mm. wide and 90 mm. between jaws. [5] For test specimen 15 mm. wide and 100 mm. between jaws. [6] All physical tests made under conditions of 65 per
equal amounts of unbleached rags and No. 1 white shirt cuttings and 10 per cent of machine broke from runs Nos. 1,038 and 1,039. [10] Clay was added, 3

SIZED, AND SURFACE-SIZED RAG PAPERS

FROM NEW RAGS

of papers [6]

Tensile properties

Run number		Elongation at rupture		Tearing strength		Water resistance		Chemical tests of papers									Heat tests of papers [5]			
								Sizing materials				Acidity								
Paper machine	Surface sizing	Machine direction, Per cent	Cross direction, Per cent	Machine direction, Grams	Cross direction, Grams	Opacity, Per cent	Dry-indicator method 21 deg. C., Seconds	Curl method, 21 deg. C., Seconds	Ash, Per cent	Resin, Per cent	Glue, Per cent	Starch, Per cent	Extract, Kohler-Hall method, Per cent [7]	Fiber suspension, Per cent [7]	pH of extract	Alpha cellulose, Per cent	Copper number	Folding endurance in per cent of initial strength	Tearing strength in per cent of initial strength	Decrease in alpha cellulose content, Per cent	Increase in copper number
991	...	3.5	8.0	105	95	78	..	..	0.24	0.30	...	...	0.011	0.006	6.4	97.8	0.27	112	104	0.10	0.03
991	271	4.8	10.2	98	95	77	24	21	.24	.28	2.06	...	.036	.038	5.9	97.6	.27	73	93	.12	.11
992	...	3.0	7.0	109	114	77	..	..	.11	.20	...	...	.012	.006	6.3	97.7	.25	127	100	.20	.05
992	272	4.4	9.4	96	100	74	10	12	.26	.20	2.27	...	.046	.036	5.5	97.5	.32	88	87	.41	.08
993	...	3.0	8.0	128	126	...	..	..	.10	.20	...	...	.013	.008	6.1	98.0	.23	93	100	...	...
993	273	4.4	9.9	107	110	74	11	10	.22	.20	2.74	...	.048	.030	5.4	97.6	.25	90	101	.11	.10
995	...	3.5	10.0	155	138	...	..	..	.12	.20	...	...	.012	.009	6.2	98.9	.14	104	95	...	...
998	...	3.0	8.0	126	126	76	..	..	.37	.23	...	...	.015	.010	6.4	98.6	.20	112	109	—.10	.03
998	274	4.2	10.0	121	119	71	16	18	.22	.23	1.57	...	.038	.028	5.7	98.9	.17	87	96	.34	.10
1,015	...	3.0	7.5	134	126	79	14	11	.54	2.12	...	...	.081	...	5.1	97.5	.46	111	92	2.67	.53
1,015	284	4.5	10.2	117	116	76	22	20	.44	1.74	1.57	...	.095	...	5.0	97.2	.51	85	92	1.02	.40
996A	...	2.5	7.0	108	111	78	..	..	.09	.22	...	...	.011	.008	6.0	98.0	.24	89	98	.20	.03
996B	...	3.0	7.0	102	98	78	..	..	.42	.22	...	...	.045	.056	4.9	97.5	.25	86	90	.60	.12
999	...	2.5	7.5	104	103	80	..	..	.12	.22	...	...	.017	.008	6.1	97.8	.27	114	110	.10	.05
1,014	...	2.9	7.0	112	113	81	13	10	.82	2.05	...	...	.034	.031	5.1	97.7	.41	117	88	2.90	.48
1,014	285	4.3	8.7	98	96	79	21	21	.40	1.70	1.60	...	.096	...	5.0	96.0	.59	85	95	.63	.34
1,001	...	2.2	7.9	115	112	79	..	..	.27	.15	...	...	.039	.040	4.9	97.3	.21	92	99	.83	.02
1,001	275	5.0	9.4	100	106	78	15	14	.38	.15	2.39	...	.070	.076	4.8	97.5	.26	82	94	.26	.09
1,002	...	2.9	7.9	121	118	76	..	..	.27	.14	...	...	.044	.049	4.3	97.3	.32	89	97	1.19	.01
1,002	276	5.1	9.4	112	119	77	19	17	.23	.14	2.06	...	.064	.088	4.6	97.6	.28	74	88	.39	.15
1,003	...	2.8	7.7	117	121	77	..	..	.32	.15	...	...	.053	.053	4.2	98.0	.26	68	80	2.30	.30
1,003	277	4.7	9.6	103	114	78	22	21	.23	.15	2.01	...	.065	.080	4.8	97.6	.32	77	93	.79	.16
1,004	...	2.5	7.2	113	121	79	16	10	.29	1.87	...	...	.028	.015	5.8	98.4	.33	96	94	2.00	.52
1,004	278	3.6	7.4	104	114	78	25	23	.41	1.87	1.46	...	.036	.028	5.6	98.5	.42	71	97	1.67	.33
1,005	...	2.7	7.0	122	120	79	22	15	.33	1.96	...	...	.036	.032	5.2	97.7	.37	92	88	2.90	.66
1,005	279	3.8	7.2	107	122	74	28	24	.43	1.96	1.63	...	.050	.056	5.2	97.5	.44	66	87	2.19	.48
1,006	...	2.9	7.2	103	107	80	21	15	.30	1.92	...	...	.060	...	4.7	97.2	.43	95	89	4.20	.63
1,006	280	4.6	7.5	111	111	75	27	21	.44	1.93	1.52	...	.063	...	4.7	97.2	.48	56	85	1.61	.57
1,007	...	2.2	6.2	114	116	81	14	10	.33	1.88	...	...	.068	.065	4.5	96.7	.47	89	91	4.60	.75
1,007	281	4.0	7.1	106	117	75	29	24	.46	1.88	1.83	...	.063	.072	4.7	96.7	.45	62	80	1.98	.50
1,008	...	2.9	8.8	102	114	75	4	3	.14	.22	...	1.16	.022	.022	5.0	97.6	.23	87	103	1.20	.06
1,008	282	4.7	8.7	107	117	73	27	21	.48	.22	2.03	.84	.036	.032	4.7	97.8	.42	75	85	.01	.06
1,009	...	3.0	8.0	112	120	73	12	10	.16	.74	...	1.05	.032	.026	5.2	98.7	.24	85	86	.54	.29
1,009	283	4.8	8.5	114	115	74	29	25	.29	.74	1.91	1.10	.038	.034	5.1	98.8	.29	66	82	.56	.22
1,000	...	2.5	7.5	117	110	77	2	2	.10	.15	...	...	.019	.011	6.1	98.3	.20	110	98	.15	.04
1,000	286	4.9	10.3	100	102	75	10	11	.18	.18	1.98	...	.071	...	5.0	98.3	.37	96	94	.14	.04
1,000	289	4.5	9.4	100	103	73	..	..	.05	.16	...	1.59	.003	...	5.8	98.3	.25	102	97	.27	.07
1,012	...	3.2	7.5	103	114	79	6	4	.30	.78	...	...	.032	.034	5.3	97.6	.33	102	100	.66	.07
1,012	287	5.2	9.6	104	106	73	22	20	.19	.62	2.25	...	.075	...	4.8	97.5	.49	92	95	.16	.09
1,012	290	4.9	9.3	107	111	76	14	13	.45	.65	...	2.01	.014	...	5.3	97.6	.36	95	98	.12	.11
1,013	...	3.1	7.0	112	119	79	10	8	.32	1.16	...	...	.032	.034	5.3	97.6	.35	101	99	.85	.17
1,013	288	4.9	9.8	91	98	74	21	20	.36	1.02	1.94	...	.042	...	5.0	97.6	.40	81	97	.67	.27
1,013	291	4.5	9.3	110	113	76	16	15	.54	1.20	...	1.76	.016	...	5.4	97.4	.43	93	96	.50	.20
1,038	...	2.4	6.5	109	115	82	13	11	.46	1.53	...	...	.037	...	5.0	95.9	.56	106	97	2.96	.57
1,038	309	4.4	9.1	98	95	81	25	17	.49	1.70	1.92	...	.050	...	5.0	97.0	.63	69	104	1.56	.45
1,039	...	2.4	7.0	118	112	80	16	14	.46	1.58	...	...	.051	...	5.0	96.5	.50	97	90	2.79	.68
1,039	310	4.0	8.8	100	105	79	27	18	.54	1.78	1.68	...	.060	...	4.9	97.0	.64	70	90	1.91	.54
1,040	...	2.6	7.4	119	121	83	16	11	.50	1.95	...	...	.048	...	4.9	96.3	.60	100	95	2.07	.55
1,040	311	4.1	9.6	110	120	80	29	20	.53	1.64	1.48	...	.067	...	4.9	97.0	.55	89	85	1.55	.54
1,041	...	2.5	7.0	118	116	84	16	11	3.10	1.80	...	...	.049	...	4.7	97.5	.53	108	89	2.77	.56
1,041	312	4.2	8.5	101	105	82	29	19	3.11	1.61	1.52	...	.070	...	4.7	97.8	.51	66	92	1.62	.55
FROM OLD RAGS																					
1,025	...	2.2	4.8	50	53	85	2	1	.33	.67	...	...	.004	...	6.9	89.6	1.16	93	110	.65	.10
1,026	...	2.3	4.9	56	53	84	1	1	.57	.61	...	...	.004	...	6.3	90.0	1.13	96	96	1.14	.15
1,027	...	2.5	5.2	53	51	84	1	1	.41	.52	...	...	.054	...	4.4	89.1	1.23	80	90	2.37	.21
1,027	292	3.6	6.0	47	45	83	21	16	.52	.47	3.08	...	.094	...	4.5	89.7	1.40	64	92	2.02	.17
1,028	...	2.5	4.7	51	54	84	1	1	.55	.54	...	...	.070	...	4.2	88.7	1.19	66	82	4.26	.43
1,028	293	3.6	5.9	46	47	82	21	14	.44	.54	3.13	...	.109	...	4.3	89.2	1.41	59	93	.98	.15
1,029	...	2.3	4.8	57	56	84	8	5	.59	2.45	...	...	.024	...	5.8	89.3	1.36	80	90	1.27	.43
1,029	294	3.4	6.4	49	46	85	18	15	.66	2.07	3.28	...	.034	...	5.4	89.3	1.53	64	93	2.50	.36
1,030	...	2.4	4.9	58	57	84	15	11	.74	2.82	...	...	.061	...	5.3	89.0	1.47	82	88	3.75	.59
1,030	295	3.4	5.7	49	50	84	26	19	.66	1.99	2.98	...	.088	...	4.9	88.4	1.65	50	92	2.86	.49
1,031	...	2.2	4.4	56	56	86	17	12	.51	2.32	...	...	.081	...	4.7	86.8	1.52	80	85	4.12	.73
1,031	296	3.3	5.2	49	50	85	17	15	.59	1.35	1.94	...	.079	...	4.7	86.3	1.67	59	84	4.36	.57
1,032	...	2.1	4.4	58	58	87	15	11	.64	2.28	...	...	.090	...	4.4	87.2	1.31	81	84	6.02	.83
1,032	297	3.1	5.3	53	54	84	21	17	.61	1.96	2.39	...	.100	...	4.4	88.0	1.52	52	87	4.53	.67
1,033	...	2.6	5.2	55	57	84	3	2	.38	.55	...	.99	.013	...	5.2	91.3	.95	79	94	1.79	.16
1,033	298	3.5	6.2	52	55	84	24	18	.44	.50	3.55	1.10	.050	...	4.8	92.4	1.32	64	89	1.64	.18
1,034	...	2.5	5.1	58	60	85	9	6	.41	1.33	...	1.14	.046	...	4.9	89.9	1.15	65	90	2.96	.41
1,034	299	3.7	6.0	52	52	81	19	15	.44	1.11	3.43	1.08	.095	...	4.7	90.7	1.48	52	90	3.11	.69
1,035	...	2.4	5.2	56	57	85	1	1	.21	.26	...	...	.001	...	6.3	90.1	1.15	88	94	.32	.10
1,035	300	3.5	6.0	50	51	85	18	17	.58	.30	6.31	...	.046	...	5.5	91.1	1.92	75	94	.92	—.03
1,035	303	3.5	5.9	49	50	84	8	6	.46	.23	3.75	...	.023	...	5.7	90.3	1.51	79	98	1.49	.05
1,035	306	3.4	5.6	50	53	85	2	1	.18	.33	...	2.89	.002	...	6.4	89.5	1.16	90	96	1.61	.13
1,036	...	2.2	4.5	60	62	87	3	1	.46	.83	...	...	.045	...	4.7	87.4	1.31	81	90	1.16	.20
1,036	301	3.5	5.5	52	50	84	30	21	.74	.74	6.96	...	.142	...	4.7	90.7	2.08	38	87	2.24	.14
1,036	304	3.4	5.5	51	49	83	22	16	.49	.72	4.12	...	.104	...	4.7	89.4	1.71	55	86	1.89	.22
1,036	307	3.0	5.2	57	52	84	21	15	.40	.74	...	2.85	.037	...	4.9	88.2	1.31	77	92	.69	.24
1,037	...	2.2	4.8	58	60	87	8	5	.50	.97	...	...	.058	...	4.7	87.0	1.40	80	82	3.20	.36
1,037	302	3.6	5.6	52	50	84	31	24	.65	1.08	6.20	...	.123	...	4.7	89.6	1.83	47	93	1.89	.31
1,037	305	3.2	5.3	50	46	83	27	18	.57	1.07	3.95	...	.103	...	4.8	88.4	1.76	54	95	1.18	.31
1,037	308	3.0	5.2	51	49	84	24	14	.43	1.10	...	2.64	.047	...	4.8	88.0	1.39	74	98	1.97	.36

cuttings; old rags were No. 1 old whites. [5] Bursting pressure in pounds per square inch through a circular orifice 1.2 inches in diameter. [6] For test specimen cent relative humidity and 70 deg. F. [7] Acidity expressed as per cent SO_3. [8] Samples heated at 100 deg. C. for 72 hours. [9] The furnish for this run was per cent, based on weight of furnish.

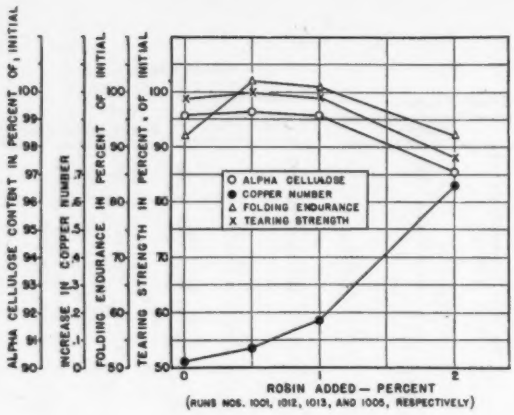
ALPHA CELLULOSE CONTENT IN PERCENT OF INITIAL
INCREASE IN COPPER NUMBER
FOLDING ENDURANCE IN PERCENT OF INITIAL
TEARING STRENGTH IN PERCENT OF INITIAL
O ALPHA CELLULOSE
● COPPER NUMBER
Δ FOLDING ENDURANCE
X TEARING STRENGTH
ROSIN ADDED— PERCENT
(RUNS NOS. 1001, 1012, 1013, AND 1005, RESPECTIVELY)

FIG. 5.
Effect of rosin (pH of stock constant) on stability of new-rag papers.

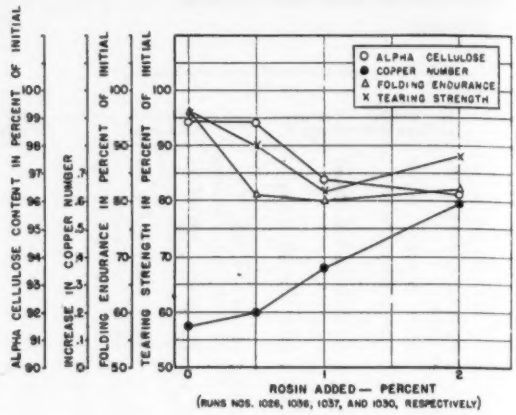
ALPHA CELLULOSE CONTENT IN PERCENT OF INITIAL
INCREASE IN COPPER NUMBER
FOLDING ENDURANCE IN PERCENT OF INITIAL
TEARING STRENGTH IN PERCENT OF INITIAL
O ALPHA CELLULOSE
● COPPER NUMBER
Δ FOLDING ENDURANCE
X TEARING STRENGTH
ROSIN ADDED— PERCENT
(RUNS NOS. 1026, 1036, 1037, AND 1030, RESPECTIVELY)

FIG. 6.
Effect of rosin (pH of stock constant) on stability of old-rag papers.

pertinent papermaking data and the results of tests on the papers produced are given in Table IV.

The results of the runs, in which the amount of rosin was varied but the acidity kept practically constant, are shown in Figs. 5 and 6. The curves indicate that the presence of any appreciable amount of rosin—over 1 percent for new rags; less for old—caused a very decided increase in copper number and decrease in alpha cellulose content on oven aging. There was some decrease in folding endurance and tearing strength of the papers made from new rags, but the initial folding endurance and tearing strength of the papers from old rags were so low that the decrease for the heat-treated samples was not pronounced.

The test data on the runs, in which the amount of rosin was kept constant at 2 percent and the amount of alum was varied, are shown graphically in Figs. 7 and 8. The curves show that as acidity increased, folding endurance and tearing strength of the heat-treated samples decreased moderately, whereas there were decided changes in the copper number and alpha cellulose content. All the rosin-sized papers were yellowed by the heat treatment, the amount of color change increasing with increasing amounts of alum.

In general, the initial folding endurance of the rosin-sized papers was less than that of the unsized papers. The initial folding strength of the rosin-sized papers (sized with 2 per cent of rosin) decreased as the amount of alum was increased (see Fig. 9). That is, with the same rag stock and the same beater roll manipulation, the original folding strength of the paper made without rosin (unsized) was greater than that of paper containing rosin; and as the alum content was increased the original folding strength of the paper decreased if rosin was present.

The necessity for employing only minimum amounts of rosin and alum in the sizing of papers intended to be used for permanent records is now generally recognized. The optimum pH value for combining high stability with adequate sizing is approximately 5.0.

In regard to acidity, Dr. Minor[13] makes the following statements: "Today, all papers made for quality or for any considerable life span are made to definite pH specifications which should be controlled throughout the process. * * * Today a pH of 5.0 for the water extract of paper has been rather widely accepted as a safe lower margin for papermaking."

Although coloring materials were not used in the study of the rag papers made at the Bureau, the control of pH is very important in the adsorption of dyes by cellulose and fillers, and the pH stated above as optimum for combining high stability with adequate sizing appears to be compatible with conditions favorable to the adsorption of dyes. Soderberg in his work on Factors Governing Absorption of Dyestuffs by Paper Fibers[14] states, "Tests were made using various representative dyes and it was concluded that with the exception of pigment dyestuffs

[13] Jessie E. Minor, *Chemical control in paper manufacture*, Paper Trade J. 99, 20, 45-48 (1934).
[14] Paper Trade J. 97, 21, 39-45 (1933).

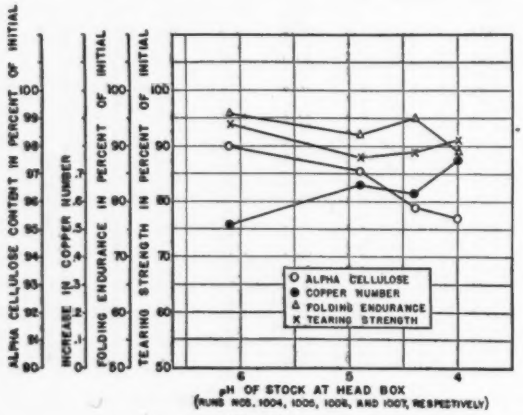
ALPHA CELLULOSE CONTENT IN PERCENT OF INITIAL
INCREASE IN COPPER NUMBER
FOLDING ENDURANCE IN PERCENT OF INITIAL
TEARING STRENGTH IN PERCENT OF INITIAL
O ALPHA CELLULOSE
● COPPER NUMBER
Δ FOLDING ENDURANCE
X TEARING STRENGTH
pH OF STOCK AT HEAD BOX
(RUNS NOS. 1004, 1005, 1006, AND 1007, RESPECTIVELY)

FIG. 7.
Effect of acidity on stability of rosin-sized (2 per cent rosin) new-rag papers.

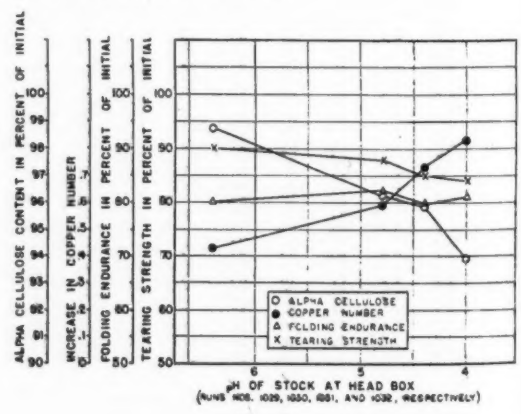
ALPHA CELLULOSE CONTENT IN PERCENT OF INITIAL
INCREASE IN COPPER NUMBER
FOLDING ENDURANCE IN PERCENT OF INITIAL
TEARING STRENGTH IN PERCENT OF INITIAL
O ALPHA CELLULOSE
● COPPER NUMBER
Δ FOLDING ENDURANCE
X TEARING STRENGTH
pH OF STOCK AT HEAD BOX
(RUNS NOS. 1029, 1030, 1031, AND 1032, RESPECTIVELY)

FIG. 8.
Effect of acidity on stability of rosin-sized (2 per cent rosin) old-rag papers.

the majority of colors react most favorably to an acid condition of from pH 4.5 to 5.5 produced in the presence of rosin size and aluminum sulphate. Speaking generally, anything below the range mentioned produced a deadened shade, while above the 5.5 figure the colors were not entirely absorbed." Roberts[15] found that the pH values at which different dyestuffs show maximum color strength vary considerably, and that no one pH can be established for all groups of dyestuffs. The optimum pH values given for the different colors tested were, however, between 4.6 and 6.0, with the greater number between 5.0 and 5.7, which are satisfactory values as far as permanence of the finished paper is concerned.

Beater starch, manufactured commercially by an oxidation process, was added to the beater for two runs, nos. 1,008 and 1,009, for new rags, and two runs, nos. 1,033 and 1,034, for old. For one run in each case rosin size was not used, and for the other 1 percent was employed. Data relative to the papers are given in Table IV. In general, the starch increased the bursting strength, tensile breaking strength, and folding endurance of the papers made from new rags, but had little effect on those made from the old. The starch did not have a deteriorating effect on the stability of the papers in the heat test.

Clay was included in the furnish for one run, no. 1,041, and the measurements on the paper made are further evidence of the generally accepted statement that inert mineral fillers may be safely added to beater furnishes for permanent record papers.

Surface-Sized Papers

Results of tests on the unsized and beater-sized papers after they were surfaced sized are also given in Table IV. In most of the surface-sizing runs a 4-percent glue solution was employed, but a 4-percent starch solution also was used for one group of three papers of varying rosin content, and in the case of old rags three papers were treated with an 8-percent glue solution as well. Complete data relative to the sizing solutions are included in the table.

The relative stability of the papers was not materially affected by the surface sizing. The surface-sized papers showed the same general trend as the base papers, but to a lesser degree. As the amount of alum in the rosin-sized papers, or the rosin content of the paper, was increased, the deterioration of the surface-sized paper increased also.

The relative stability of the surface-sized and the base papers is shown graphically in Figs. 10 and 5, respectively, for one group of papers of varying rosin content. The stability of the surface-sized papers as measured by the heat test was in the same general direction as that of the base papers before being surface sized, although the surface sizing seems to have served as a protective material and to have retarded the change in alpha cellulose content and copper number.

The foregoing shows that careful processing of raw materials and purity of fiber in respect of active chemical components are necessary for the manufacture of stable papers. Resistance of paper to deterioration from internal causes is not sufficient to insure its stability however. The conditions of its use and storage are as important as the initial quality of the paper. For discussion of external deteriorative agencies—light, temperature, humidity, acidic pollution of air—and recommendations as to storage conditions for prolonging the life of paper, the reader is referred to a previous Bureau publication.[16]

Summary

The relations of the cellulosic purity of the particular grades of rags used and of the processing treatments employed to make them into paper, on the stability, as indicated by the heat test, and on the strength of the rag-fibre writing papers made, were found to be as follows:

1. The new rags had a higher degree of cellulosic purity and were stronger than the old rags. These differences were reflected in the papers made from the rags. The new-rag papers were very stable and very strong when properly made, while the old-rag papers were less stable and were weak.

2. In the preparation of the half-stuff the cellulosic purity of the rags was not changed much, but in general was improved somewhat.

3. The beaten fibers from the new rags were long, clean, and well fibrillated; those from the old rags were shorter, more broken, and less fibrillated.

4. In general, rosin sizing decreased the folding endurance somewhat, but had little effect on bursting, tearing, or tensile breaking strength.

5. With increasing amounts of rosin at pH 5, the folding endurance and tearing strength decreased somewhat when the papers were heated, and there was a decrease in alpha cellulose and increase in copper number. These

[15] *Paper dyeing*, Paper Ind. 15, 6, 313-315 (1933).

[16] Summary Report of Bureau of Standards Research on Preservation of Records, Misc. Pub. BS M144 (1934).

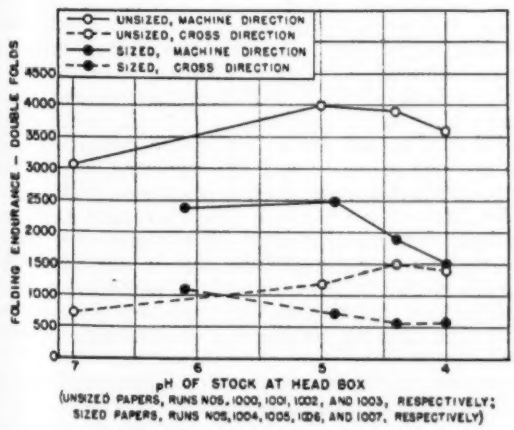

Fig. 9.
Comparative folding endurance of unsized and rosin-sized new-rag papers of varying acidity.

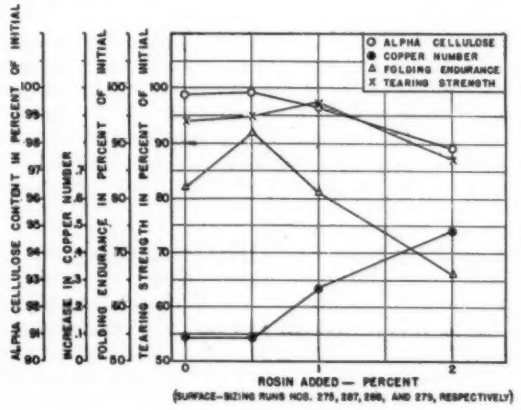
ALPHA CELLULOSE CONTENT IN PERCENT OF INITIAL
INCREASE IN COPPER NUMBER
FOLDING ENDURANCE IN PERCENT OF INITIAL
TEARING STRENGTH IN PERCENT OF INITIAL
ALPHA CELLULOSE
COPPER NUMBER
FOLDING ENDURANCE
TEARING STRENGTH
ROSIN ADDED — PERCENT
(SURFACE-SIZING RUNS NOS. 279, 287, 288, AND 275, RESPECTIVELY)

Fig. 10.
Comparative stability of surface-sized new-rag papers of varying rosin content. (See Fig. 5 for base papers).

changes are evidences of deterioration. They were noticeable at about 1 percent rosin content for the papers prepared from new rags and at a somewhat lower content for those made from old rags. All the rosin-sized papers were yellowed by the heat treatment, the degree of discoloration depending on the amount of rosin and the degree of acidity.

6. Increase in acidity of unsized papers had little effect on their strength, but caused decrease in the folding endurance of rosin-sized papers.

7. With increasing amounts of alum and resultant corresponding increases in acidity, as measured by pH, with constant rosin content of 2 percent, the folding endurance and tearing strength decreased moderately when the papers were heated, and there was a decided decrease in alpha cellulose, and increase in copper number. These changes in alpha cellulose and copper number accelerated at acidities below pH 5. Of papers of the same acidity, those having the lower content of rosin were the more stable. The effects of acidity resulting from the use of alum were similar for the two kinds of rags.

8. In general the starch beater sizing increased the bursting strength of the papers made from new rags but had little effect on those made from old. Other investigators have found that starch does not always increase the strength of papers. The starch did not have a deteriorating effect on the stability of the papers in the heat test.

9. The increased strength imparted to the paper by surface sizing (with glue or starch) was largely lost in the heat test. In general, surface sizing did not materially affect the papers of high stability, although it seems to have served as a protective surface which retarded chemical deterioration of the less stable papers.

10. Clay filler, used in one paper only, had no effect on the stability of the paper.

It is believed that these results were secured with representative raw materials and processes obtaining at the time the work was done, which was during the years 1933-34.

It should be emphasized that the purpose of the work was to correlate the properties of the rags with the properties of the paper, when the paper was made by the methods and with the equipment described herein. If a better grade of old rags had been used, or if the process of manufacture had been modified, the qualities of the papers might, of course, have been different from those found.

Acknowledgment

The authors are indebted to John O. Burton and E. E. Creitz, of this Bureau, and to Royal H. Rasch, formerly research associate at this Bureau, for the Brown Co., Berlin, N. H., for chemical tests of the rags, half-stuffs, and finished papers, and to Miss M. L. Rollins, of this Bureau for the photomicrographs.

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Alkaline Processes

Pulping Process. Robert Thomas. U. S. pat. 1,998,344 (April 16, 1935).—Chips are cooked for 2.5 to 3 hrs. at a working steam pressue of 125 lbs. per sq. in. in an 8° Bé. caustic soda liquor (at the rate of 5 gal. for 14 lbs. of green wood) containing pulverized borax, granulated ammonium chloride, oxalic acid, potato starch and sodium sulphate. It is claimed that 17 percent more fiber is obtained than by the usual soda process.—A.P.-C.

Production of Cellulosic Products. Henry Dreyfus. U. S. pat. 1,996,797 (April 9, 1935).—Wood, straw, grasses, etc., are impregnated with a substance adapted to liberate a gas on heating *e.g.*, a solution of sodium bicarbonate), and heated in a closed vessel to a temperature between 120° and 150°C. The pressure developed within the material is released suddenly, and the material is subjected to a chemical pulping process. The process can be applied to chemical pulp preparatory to conversion into cellulose derivatives.—A.P.-C.

The Cooking Process. VIII. Volatile Organic Acids By the Saponification of Aspen Wood. S. I. Aronovsky and Ross Aiken Gortner. Ind. Eng. Chem. 27: 451-454 (April, 1935).—Aspen sawdust was cooked with sodium carbonate for 2 hours at 170°C., the radio of wood to liquor and the concentration of carbonate in the liquor being varied. The yields of volatile organic acids (recovered by distilling the black liquor with phosphoric acid) varied from 4.6 to 7.0 percent of the oven-dry wood, calculated as acetic acid. Decrease in the concentration of sodium carbonate gave a slight decrease in the yields of volatile acids, while varying the wood-to-water ratio, within the limits experimented with, had no appreciable effect. Production of volatile organic acids is therefore attributed to saponification. Only acetic and formic acids were present, the ratio of formic to acetic acid varying from 1:59.9 to 1:9.4.—A.P.-C.

Production of Cellulose. Henry Dreyfus. Fr. pats. 773,815 and 773, 850 (Nov. 26, 1934).—*No. 773,815*—An apparatus is described for continuously circulating an extraction liquid through lignocellulosic material such as wood. *No. 773,850*—The solvent for the lignin is cooled after passing through the material to precipitate lingin and is then reheated and recirculated through the material—A.P.-C.

Production of Pure By-Products from Resin-Containing Liquors. Edward H. French. U. S. pat. 1,997,171 (April 9, 1935)—This is an improvement on French's U. S. pats. 1,693,586 of Nov. 27, 1928, and 1,810, 472 of June 16, 1931. The resinates and fatty acid salts contained in black liquor are converted into rosin and fatty acids which are dissolved in a water-insoluble solvent in the ratio of one part of total rosin and fatty acids to at least 5 parts of solvent. The mixture is distilled under vacuum at a temperature that is not substantially above 275°C., so that the fatty acids and solvent are removed without substantial decomposition of the rosin. The latter is then recrystallized from a suitable solvent.—A.P.-C.

Treatment of Black Liquors to Regenerate Their Alkali Metal Compound Content. Gustaf Haglund assignor to Patentaktiebolaget Grondal-Ramen. U. S. pat. 1,997,773 (April 16, 1935).—The molten mass obtained through combustion of black liquor is cooled, finely crushed, and subjected to a roasting treatment at a temperature

between limits determined on the one hand by the oxidation of the sulphides and the decomposition of the thiosulphate, and on the other hand by the sintering of the molten mass (between about 240° and 500°C.). Roasting can be carried out by passing furnace gases over the finely crushed material.—A.P.-C.

Evaporation of Waste Pulp Liquors. Erik Oman assignor to Industrikemiska Aktiebolaget. U. S. pat. 1,995,999 (March 26, 1935).—The vapors from pulp drying or paper machines are used for preheating spent liquors to be evaporated.—A.P.-C.

Paint-, Varnish-, and Lacquer-Remover and Metal Cleaner, Rust Inhibitor and Degreasing Composition. Paul Hodges assignor to Gulf States Paper Corp. U. S. pats. 1,993,096 to 1,993,099 (March 5, 1935).—*No.* 1,993,096—"Floating soap" obtained from soda or sulphate black liquor may be used with amylene dichlorides, alcohol, water, oleic acid, etc. *No.* 1,993,097 relates to metal-cleaning and corrosion-inhibiting compositions containing "floating soap," together with an organic metal-cleaning solvent such as amylene dichlorides and water, etc. *No.* 1,993,098 relates to degreasing compositions containing "floating soap" together with a chlorinated hydrocarbon such as trichloroethylene and an alcohol, etc. *No.* 1,993,099 relates to a rust inhibitor containing "floating soap" in aqueous solution.—A.P.-C.

Ore Flotation. Torsten Hasselstrom. U. S. pats. 1,896,816 and 1,986,817 (Jan. 8, 1935).—*No.* 1,986,816 covers a process of concentrating an oxidized ore of an alkaline earth metal (such as a phosphate ore) by adjusting an aqueous pulp of the ore to a PH of about 7.5 to 9.0 and then subjecting to a flotation treatment with talloil from sulphate black liquor. *No.* 1,986,817 covers an oreflotation reagent consisting of sulphate black liquor talloil.—A.P.-C.

Sulphite Process

The Ellis-Burns Compound Air Preheater. Anon. Pulp Paper Can. 36: 135-136 (Feb., 1935).—A discussion of the advantages of and savings effected by the Ellis-Burns compound air preheater for sulphur burners.—A.P.-C.

Flash Roasting Pyrite with the Nichols-Freeman System in the Manufacture of Sulphite Pulp. Carl D. Jentz, Jr. Pulp Paper Can. 36: 61-63, 104 (Convention Issue, 1935).—A description of the construction, operation and performance of the unit installed and operated commercially at the plant of St. Lawrence Paper Mills Co., Three-Rivers, Que.—A.P.-C.

Heat Requirements for Sulphite Pulping. O. L. Berger. Paper Trade J. 100, No. 6: 44 (Feb. 7, 1935).—Answers to a questionnaire received from 15 mills indicated that there was a saving of 2600 lbs. of steam per ton of sulphite by the use of the Chemipulp process, and a saving of a little less than 2400 lbs. by the use of forced circulation and indirect heating. The mill reporting the least steam consumption used a much stronger acid than any of the other mills.—A.P.-C.

A Study of Some Factors Influencing the Formation and Dissociation of Sulphur Trioxide in Sulphur Burner Gases for Sulphite Pulping. B. L. Browning and Otto Kress. Paper Trade J. 100, No. 19: 31-43 (May 9 1935).—A comparison of the spray type sulphur burner of the Texas Gulf Sulphur Co. with other types of commercial burners relative to sulphur trioxide formation and the corrosive effect of sulphur trioxide on heat interchanging equipment.—A.P.-C.

Technical Control in the Manufacture of Sulphite Pulp. R. S. Hatch. Paper Ind. 16: 758-759 (Feb., 1935).—A general discussion of the function and advantages of technical control in the sulphite industry.—A.P.-C.

Commercial Yield of Pulp from Wood in the Manufacture of Sulphite. J. B. Jones. Pulp Paper Can. 36: 82-84 (Convention Issue, 1935).—A description and discussion of the methods of wood and stock measurement used for obtaining pulp yield values at the Thorold mill of Ontario Paper Co. By careful control total yield was increased from 48 percent to about 52 to 53 percent, and the yield of accepted pulp from as low as 40.5 percent to as high as 51 percent. The wood density apparently has no distinct bearing on the yield by weight as obtained in commercial practice. Though it is felt that precirculation of the liquor is advantageous, no definite improvement in the quality of the stock could be noted attributable to this cause.—A.P.-C.

Qualitative Reaction for the Detection of Lignone Sulphonates (Sulphite Waste Liquor). Alfred Tingle. Analyst 60: 86-87 (1935).—Sulphite waste liquor has become used in divers ways and is found in materials ranging from fire-proof cements to tanning liquors. Take 10 cc. of filtered aqueous extract and heat with 0.5 g. of potassium chloride until the reagent has all dissolved. Cool, cautiously make acid with concentrated hydrochloric acid and look for an orange-red color. If much sulphonate is present an orange-red solid will separate and there will be considerable evolution of gas.—A.P.-C.

Beating

The Effect of Temperature on the Beating of Rag Stock. Harry F. Lewis and LaVern A. Gilbertson. Paper Trade J. 100, No. 15: 37-43 (April 11, 1935).—The changes taking place in the beating characteristics of rag stock as the result of variations in temperature between 6° and 85°C. were studied in a temperature-controlled Noble and Woods 20-gal. beater. The results indicated that the rate of beating is somewhat faster at 25° than at either 6° or 45°C., while the slowest beating of all takes place at 85°C.—A.P.-C.

Beater Water Control System. Malcolm B. Hall. Paper Trade J. 100, No. 14: 33-34 (April 4, 1935).—A description of an interlocking beater water volume control system, which makes use of an intermediate chest into which the beater contents are dumped, washed and diluted to a definite consistency, thus facilitating maintenance of a uniform stock consistency in the beater chest and subsequently.—A.P.-C.

Paper Stock Treatment, Mixing and Beating with Rods. Sidney D. Wells. Paper Trade J. 100, No. 14: 36-41 (April 4, 1935).—A discussion showing that the merits of the principle of mixing and beating of paper stock by the use of rods have been proved in practically every application in which it has been tried.—A.P.-C.

The Natural Cellulose Fiber and Its Hydration. Curt Weil. Paper Ind. 16: 842-845 (March, 1935).—An explanation of the theoretical concept of the structure of a cellulose fiber and of the changes it undergoes under mechanical treatment, according to the results of recent investigations.—A.P.-C.

The Adverse Function of Gases in the Manufacture of Paper. Judson A. DeCew. Paper Trade J. 100, No. 5: 3-31 (Jan. 31, 1935).—A discussion of the effects of the presence of oxygen, nitrogen and carbon dioxide in the paper making furnish, drawing attention to the retarding effect of entrained air on hydration, probable deterioration in physical properties through oxidation, and the interference of entrained air upon water drainage and felting of the fibers on the machine wire. These drawbacks can be overcome by the author's U. S. pats. 1,704,728 of March 12, 1929 and 1,853,849 of April 12, 1932.—A. P.-C.

Operation of Beaters and Draining Tanks in the Reworking of Waste Paper or Paper Cuttings. V. T. R. Papeterie 57: 110, 113 (Feb. 10, 1935).—A brief discussion of the proper method of working up waste papers or paper cuttings in the beater or in the kollergang.—A.P.-C.

Beating from Standpoints of Control and Design. Arthur B. Green. Paper Trade J. 100, No. 5: 33-38 (Jan. 31, 1935).—A review or survey of the subject of mechanical preparation of stock for paper making in order, if possible, to find the practical and promising course of future development.—A.P.-C.

Hydration of Pulp. George S. Witham, Jr. U. S. pat. pat. 2,000,268 (May, 7, 1935.)—Stock is subjected to a combined beating and impacting treatment, either successively or simultaneously; *e.g.,* by beating in a hollander and projecting it forcibly against a suitable target.—A.P.-C.

Beater. E. & M. Lamort Fils. Brit. pat. 422,875 (Jan. 17, 1934).—In a continuous beater the pulp is flung upwards by the roll in conjunction with adjustable guides, the finest pulp taking a higher trajectory than the coarse and being collected in a by-pass channel above the main circuit; the pulp screens are situated in the by-pass and the raw material is fed into the main circuit at a point just before the rejections from the screens rejoin the main circuit. The material which passes through all the screens in series is considered finished.—A.P.-C.

Apparatus for Grinding, Refining and Hydrating Fibrous Substances. Ateliers Neyret Beylier. Brit. pat. 422,680 (June 9, 1934)—Material for the manufacture of paper, cardboard, or the like, is continually passed in the form of a thick pulp between pairs of rolls which are strongly pressed together, the lifting of the pulp back to the nip being effected by a rotary drum surrounding the rolls and provided with internal lifting blades.—A.P.-C.

Treatment of Paper Pulp. Harold S. Holt and George L. Schwartz assignors to E. I. du Pont de Nemours and Co. U. S. pat. 1,998,758 (April 23, 1935).—Ordinary paper pulp is treated with strong caustic soda solution under conditions which avoid drastic action between the alkali and the fiber, and the treated pulp is beaten with water in a special manner which causes hydration without substantial shortening. Finally, starch is incorporated into the hydrated pulp.—A.P.-C.

Machine for Slushing Sheets of Pulp. William T. Doyle, Thomas J. Sturtevant and Laurance H. Sturtevant assignors to Sturtevant Mill Co. U. S. pat. 1,999,402 (April 30, 1935).—This is an improvement on Doyle's U. S. pat. 1,910,382, of May 23, 1933, and covers various mechanical features in the construction of the machine that are intended to give accurate guiding and more positive feeding of a bale of sheets to a rotary hammer mill, more positive intake of the successive sheets by the mill, adjustability for sheets of different sizes, and easier control of the volume of water.—A.P.-C.

Hollander. Fritz Arledter. U. S. pat. 1,996,740 (April 9, 1935).—The machine comprises a cylinderical or spherical casing in which are mounted a suitable beater roll and bedplates, with a trough surrounding the upper part of the roll to provide a stock inlet below the roll and outlet above it. During beating the whole casing is kept under vacuum.—A.P.-C.

Bed Plate. Albert J. Allison assignor to Simonds Worden White Co. U. S. pat. 1,986,660 (Jan. 1, 1935).—The spaces between the bars are filled with an abrasive material.—A.P.-C.

Bleaching

Method of Bleaching Cellulose Materials. John Campbell and Lancelot O. Rolleston assignors to International Paper Co. U. S. pat. 1,996,363 (April 2, 1935).—A stream of pulp at high consistency is passed continuously from a storage vessel through a comparatively long chamber or pipe under a pressure in the neighborhood of 70 lbs. per sq. in. and at a temperature of about 120°F. Liquid chlorine is forced into the chamber at a point near the pulp inlet, the quantity injected and temperature and rate of passing of the pulp through the chamber being adjusted so that the pulp is bleached to the desired point on being discharged from the chamber.—A.P.-C.

Elimination of Metallic Particles from Stock for Photographic and Other Papers. Anon. Papeterie 57: 57-58 (Jan. 25, 1935).—Metallic particles are readily solubilized in the cold by bleaching the pulp at a consistency of 30 percent or higher with chlorine gas.—A.P.-C.

Sizing

Special Types of Rosin Size and Their Physical Properties. Judson A. DeCew. Paper Trade J. 100, No. 11: 44-46 (March 14, 1935).—A discussion and classification of the different types of rosin size and their physical properties together with an outline of the conditions for which each type is best suited.—A.P.-C.

Our Present Knowledge of Rosin. E. A. Georgi. Paper Trade J. 100, No. 12: 42-44 (March 21, 1935).—A review of the history of rosin and naval stores manufacture, properties of and tests for rosins and a consideration of the composition of rosin and the nature of some of its salts, with a bibliography of 20 references.—A.P.-C.

Principles of Bennett Size-Making Process. O. F. Neitzke. Paper Trade J. 100, No. 17: 39-41 (April 25, 1935).—The fundamental principle of the method is the processing of a relatively small amount of material in an exceedingly short time, in a continuous process which can be closely and quickly controlled.—A.P.-C.

What I Do Not Know About Sizing and Capillary Flow. R. M. Cobb. Paper Trade J. 100, No. 16: 42-45 (April 18, 1935).—A brief discussion of some of the vital but unknown factors in sizing: contact angles and the laws governing penetration and swelling by fluids; the physical state and position of sizing materials in the fiber; the raison d'être and effect of internal and surface sizing; basis of water, grease, moisture, and ink resistance. Some test methods are suggested or reviewed.—A.P.-C.

Solutions of Basic Salts of Aluminum. Arthur W. Thomas. Paper Trade J. 100, No. 9: 36-39 (Feb. 28, 1935).—Certain pecularities in the properties and the complicated nature of basic aluminum salt solutions are explained by Werner and Pfeiffer's "olation" theory. This theory, supplemented by the phenomenon of "oxolation" and developed originally for chromium and cobalt salts, is general in nature, providing an explanation for the properties of basic metallic salt solutions, including the colloidal state thereof.—A.P.-C.

Colloidology of Starch Hydrosols and Its Applications in Paper Making. Papeterie 57: 102-109, 150-154, 198-206 (Feb. 10, 25, March 10, 1935).—A review of the colloidal properties of starches and of their applications in the paper industry.—A.P.-C.

Process for the Preparation of Size. Papeteries Navarre, Fr. pat. 776,244 (Oct. 10, 1933.)—In order to prepare rosin size containing paraffin, coarsely crushed rosin containing say about 5 percent paraffin is sprayed with a cold solution of caustic soda that is circulated in a closed cycle. At a suitable point of the cycle fresh caustic soda solution is added, and at another point the size solution is continuously withdrawn for use.—A.P.-C.

Sized Paper and Process of Manufacturing the Same. Rudolf Kern assignor to Chemische Fabrik R. Baumheier

Aktiengesellschaft. U. S. pat. 1,997,366 (April 9, 1935).—Paper is sized with a rosin emulsion comprising rosin, a substance reducing the solidification point of the rosin (such as fatty oils, oil of turpentine, high boiling alcohols, and bile acids) and an emulsifying agent (preferably a casein soap). The emulsion is passed through a homogenizing machine.—A.P.-C.

Fillers and Coating Materials

Carbonate Filler for Paper. Harold R. Rafton assignor to Raffold Process Corp. U. S. pat. 1,993,750 (March 12, 1935).—Aflocculation product is prepared from a carbonate filler, a paraffin emulsion and a substantially water-soluble aluminum compound such as alum, etc.—A.P.-C.

Manufacture of Paper. Herman J. Finder and David H. Greene. U. S. pat. 1,998,190 (April 16, 1935).—The hulls of various cereals in finely divided state are used as filler. They may be added to the furnish in the beater and are subjected to a mild alkaline treatment at a temperature above atmospheric; *e.g.,* it is treated for 70 min. at 130°F. with 1 percent soda (on the weight of the total furnish).—A.P.-C.

Coating of Paper. John D. Murray assignor to The Murray Liquafilm Corp. U. S. pat. 2,000,347 (May 7, 1935).—A mixture of a cellulose coating material with a solvent is prepared at a concentration from two to four times that heretofore used; it is formed into a viscous liquid film of the desired width but somewhat thicker than the final coating, that is treated to evaporate part of the solvent, thus giving a partly-dried film that is almost self-sustaining and which is preferably formed on a transfer member from which it is stripped under heavy pressure into the paper.—A.P.-C.

Coated Paper and Process of Manufacture. John E. Schopp. U. S. pat. 1,999,260 (April 30, 1935).—A web of paper is coated with a 15-lb. coating (*i.e.,* a ream of 500 sheets, 25 by 38 in., carries 15 lbs. of coating) containing about 100 parts of clay or other pigment, 43 parts of water and 7 parts of dry casein. After partial drying, a 2-lb. coating is applied containing about 5 parts of dry casein to 100 of water; the paper is dried and varnished in known manner.—A.P.-C.

Coating Paper. F. B. Dehn, from Seaman Paper Co. Brit. pat. 423,512 (Aug. 3, 1933).—The coating is applied as a paste (about 50 percent consistency) by means of a coating press situated within the drying section of the paper machine.—A.P.-C.

Carbon Papers. I. G. Farbenindustrie A.-G. Fr. pat. 774,922 (Dec. 17, 1934).—Colored compositions for carbon papers are made by mixing aliphatic alcohols of high molecular weight with waxes, oils or greases and dyes or pigments practically insoluble in the alcohols, *e.g.,* cotton oil 1, Prussian blue 1, carnauba wax 2, paraffin 2, ozokerite 0.5 and octadecyl alcohol 1 part.—A.P.-C.

Coated Paper International Latex Processes Ltd. Fr. pat. 774,001 (May 31, 1934).—Rubber latex and a hygroscopic substance such as glycerin, diethylene glycol, ethylene glycol or preferably triethanolamine, are added to the coating color.—A.P.-C.

Coated Paper. James S. Offutt and Joseph W. Gill assignors to The Canadian Gypsum Co., Ltd. Can pat. 344,222 (Aug. 28, 1934).—Phthalic acid (8.5 parts) and caustic soda (5.5 parts) are dissolved in 1300 parts of water at room temperature. White molding plaster or calcined gypsum (850 parts) is added and the mix is stirred 1 hr. To this slurry is added 1100 parts of casein glue containing 170 parts of dry casein. The product is used directly on the paper-coating machine. The method may be modified for the utilization of a mixture of the deflocculated gypsum and coating clay by using sodium carbonate as the electrolyte and Turkey-red oil may be added to the final products.—A.P.-C.

Acid Dyes in Paper Making.. Maurice Déribéré. Papeterie 57: 2-9, 50-54 (Jan. 10 and 25, 1935).—A brief review of the properties and method of use of the more important acid dyes used for coloring paper.—A.P.-C.

Production of Light-Fast Shades on Paper. J. N. Industrie Papetiere 14: 27, 29 (Feb. 1935).—Attention is drawn to the development of Solanthrene colors specially suited for coloring paper.—A.P.-C.

Basic Dyes in Paper Making. Maurice Déribéré. Papeterie 57: 294-298, 342-346 (April 10, 25, 1935).—A review of the more important basic dyes used in paper making and of their properties.—A.P.-C.

Apparatus for Producing Color Effect in Paper. John A. Rosmait. U. S. pat. 1,996,832 (April 9, 1935).—A pipe arranged above and transversely of the fourdrinier wire, between the breast roll and suction boxes and preferably close to the breast roll, delivers a suitable color solution to a series of nozzles which discharge it in drops on the layer of stock on the wire. The discharge of color from the nozzles is regulated by providing a control valve in the outlet tube of the main color pipe; the more this valve is opened, the less color is discharged from the nozzles, and vice versa.—A.P.-C.

Drying

Paper Drying Process and Apparatus. John O. Woodsome. U. S. pat. 2,000,546 (May 7, 1935).—The drier section of the machine is completely enclosed in a suitable housing, and relatively cool (e.g. at 50°F.) conditioned air is supplied beneath the driers so as to pass upwardly at the front and rear ends of the driers, thereby inducing an outward flow of air and water vapor from the pockets formed between the drier, felt and paper web.—A.P.-C.

Protective Hood for Paper Making Machines. Henri G. Chatain assignor to Hammermill Paper Co. U. S. pat. 1,996,364 (April 2, 1935).—Formation of condensate above the driers of a paper machine is prevented by placing above this portion of the machine a shield which is provided with suitable electric heating elements which are controlled either automatically or by hand to maintain the shield at a temperature a few degrees above that of the air under the shield.—A.P.-C.

Machine for Removing Water from Wood Pulp. Olaf Qviller. U. S. pat. 1,995,011 (March 19, 1935).—A screen-covered cylinder mold is mounted for rotation partly immersed in a vat containing the pulp to be dewatered. A suitable hood is provided over the portion of the cylinder extending from the point of its emergence from the stock to the point of removal of the layer of dewatered pulp, and the space between the hood and cylinder is kept under a pressure higher than atmospheric.—A.P.-C.

Analytical and Testing Methods

Testing of Non-Fibrous Raw Materials. Clifford E. Peterson. Paper Trade J. 100, No. 19: 43-44 (May 9, 1935).—Replies received to a questionnaire sent to pulp and paper mills regarding the testing of non-fibrous raw materials showed the need of establishing standard methods for evaluating the properties of dyes, sodium silicate, sizing glues, rosin size, starches and waxes.—A.P.-C.

A Critical Study of the Evaluation of Certain Factors in the Quality of Pulp and Paper. Victor Perlmann. Papier 38: 243-259 (March, 1935).—A discussion of the practical significance and interpretation of the more gen-

erally used pulp and paper tests, drawing attention to the twofold standpoint of manufacturing qualities (*i.e.*, qualities necessitated during manufacture, such as sufficient tensile strength in the case of papers made on wide, high-speed machines) and of utilization qualities (*i.e.*, qualities necessitated by the uses to which the finished paper is to be put).—A.P.-C.

Studies of Some of the Properties of Paper Stock: Composition of Furnish, Freeness and Wetness. J. L. Gartshore. Paper Maker & Paper Trade J. 89: TS27-31 (Feb. 1935); World's Paper Trade Rev. 103: 584, 586, 624-626; 663-668, 712 (Feb. 22, March 1, 1935).—The freeness tester does not truly indicate wetness and running qualities on the paper machine. Confidence can be placed in the freeness determinations only when the values come in the upper portion of the scale, where the test is sensitive, and also where the same kind of stock is being compared; e.g., it provides a suitable beating end-point to which kraft may be beaten in one particular beater or set of similar beaters similarly operated. As low values on the freeness scale are approached, the test becomes very insensitive and has less and less relation to the wetness of the stock. A wetness tester was devised which aims to work within the limits of paper machine stock consistencies and to embody vacuum and the time factor; it furnishes a "wetness figure" defined as the time taken from the beginning of drainage to the disappearance of the water through the pat of pulp on the wire of the instrument. Examples are given, and discussed, of the results which this test gives with kraft pulps, mechanical pulp and new-spring stock—A.P.-C.

A Study of Stiffness Testing of Papers. Charles A. Minor and Jessie E. Minor. Paper Ind. 17: 35-37 (April, 1935).—A study of the stiffness of tag, index, bond and ledger papers, gave the following indications: (1) Stiffness is largely a matter of manufacturing manipulation. (2) For the heavier papers, such as tag and index papers, stiffness is much more sensitive to beater hydration than is tearing resistance. (3) For thinner papers which are beaten to maximum strength, as are bonds and ledgers, stiffness has no particular advantage in sensitivity over tear. (4) Stiffness for some grades of papers should be a valuable test as a measure of beater hydration.—A.P.-C.

Developments in Paper Testing During 1934. B. W. Scribner. Paper Trade J. 100, No. 18: 51-52 (May 2, 1935).—A very brief review with bibliography of 50 references—A.P.-C.

New Stains and Their Use for Fiber Identification. John H. Graff. Paper Trade J. 100, No. 16: 45-50 (April 18, 1935).—A comparative study of old and new stains, showing how the new stains, namely the "C" stain and the "F" stain, not only differentiate between the coniferous fibers, bast and leaf fibers, and rag and hard-wood fibers, but also between the various classes of the coniferous and hard-wood fibers.

A New Physico-Chemical Method for Determining Degree of Sizing. I. I. Kovalevski. Papier 38: 139-158 (Feb., 1935).—The quantitative relation existing between the process of sizing and the laws of capillarity, and the close connection between the degree of sizing and the critical angle of wettability are discussed. A tentative method for testing the surface properties of paper by the selective wettability and the experimental data obtained in determining the critical angle of various grades of paper are described. The improved quality of sizing is indicated by the increased selective wettability with benzene or any other non-polar liquid in the system; paper-hydrocarbon-water. Such changes in the selective wettability are closely related to the degree of sizing. The method of measuring the critical angle of wettability on the boundary line of paper-hydrocarbon-water can be used for the determination of the degree of sizing of paper and board, as well as in the study of a number of production problems. This supplies a definite physical-chemical constant, viz., the selective wettability, which can be compared with the analogous properties of a solid material. It is highly accurate and gives a constant and quantitative indication of the changes in the hydrophobic properties of paper. The method can be adapted to the study of the changes in the surface properties of pulp in the course of beating and for the determination of the wettability (permeability) of wood chips. —A.P.-C.

Photocolorimetry of the Art of Scientifically Determining the Coloration of Paper. F. V. Mon. Papeterie Belge 14: 747-753 (Dec., 1934).—An explanation of the principle of the photocolorimeter and of the use of color curves, with a description of the Toussaint photocolorimeter and a discussion of its applications in the paper industry.—A.P.-C.

A Study of the Factors Influencing the Brightness of Paper as Recorded by the General Electric Reflection Meter. Edwin R. Laughlin and Otto Kress. Paper Trade J. 100, No. 8: 110-127 (Feb. 21, 1935).—Fluctuations in freeness of the stock due to its mechanical treatment and normal variations in size and in the turbidity of the water employed have very slight effect on the brightness uniformity of the resulting sheet. The paper machine itself presents no difficulties. It is entirely possible for mills to aid brightness maintenance within the desired grading limits by the proper applications of dyestuffs.—A.P.-C.

Paper Testing Committee Annual Report. B. W. Scribner. Paper Trade J. 100, No. 5: 41-42 (Jan. 31, 1935).—A review of the work carried out by the committee during 1934.—A.P.-C.

The Various Methods of Expressing the Bursting Strength of Paper. A. Ruby. Papier 37: 1099-1104 (Dec., 1934).—The various methods of expressing the bursting strength of paper in different countries are explained, and formulas and nomographs are given for converting from one notation to another.—A.P.-C.

Water Resistance of Paper. Anon. Paper Trade J. 100, No. 13: 31-33 (March 28, 1935).—A description of the technic of the standard TAPPI method.—A.P.-C.

Report of the Committee on Physical and Chemical Standards. C. A. Sankey (Chairman) et al. Pulp Paper Can. 36: 55-59 (Convention Issue, 1935).—Annual report of the Committee to the Canadian Technical Section, together with appendixes giving the equivalence between metric units and the customary units in use in America for expressing the results of the physical properties of paper and also a summary of recent developments in the field of standards of interest to the pulp and paper industry, with bibliography of 113 references.—A.P.-C.

Contribution to the Testing of Corrugated Boards. Lhomme et Argy. Papeterie 57: 158-162 (Feb. 25, 1935). —In the determination of the bursting strength of corrugated board, one of the most difficult variables to control is the clamping pressure, which has an appreciable effect on the results obtained. The authors propose to eliminate this variable completely by not applying any pressure on the clamping ring. Slipping of the sample is prevented by interposing a suitable rubber ring between the diaphragm and the metal ring which holds it in position; as the pressure under the diaphragm increases and forces it against the board being tested, the rubber ring presses against the sample sufficiently effectually to prevent any slipping.—A.P.-C.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING NOVEMBER 9, 1935

CIGARETTE PAPER

Liggett & Myers Tobacco Co., Collamer, Havre, 334 cs.; Standard Products Corp., Champlain, Havre, 75 cs.; Champagne Paper Corp., by same, 275 cs.

WALLPAPER

S. K. Lonegren, Drottningholm, Gothenburg, 8 bxs.; W. H. S. Lloyd & Co., American Merchant, London, 4 bls.

WALLBOARD

Treetex Corp., Drottningholm, Gothenburg, 1881 bdls.

NEWSPRINT

N. Y. Evening Journal, Markland, Liverpool, N. S., 396 rolls; N. Y. Tribune, by same, 1711 rolls; World Telegram, by same, 643 rolls; Bridgeport Herald, by same, 53 rolls; Brooklyn Daily Eagle, by same, 768 rolls; Clinton paper Corp., by same 1064 rolls; H. Reeve Angel & Co., Inc., Argosy, Helsingfors, 165 rolls; Parsons & Whittemore, Inc., Drottningholm, Gothenburg, 375 rolls; Jay Madden Corp., Hansa, Bremen, 136 rolls.

PRINTING PAPER

Oxford University Press, Laconia, Liverpool, 8 cs.; Dingelstedt & Co., Hansa, Hamburg, 22cs.; E. Dietzgen & Co., Hansa, Bremen, 20 cs.

WRAPPING PAPER

F. C. Strype, Black Eagle, Antwerp, 9 cs.; ———, Drottningholm, Gothenburg, 196 rolls, 19 bls.; ———, Statendam, Rotterdam, 23 bls.; Scharf Bros., by same, 4 cs.; E. Dietzgen & Co., Hansa, Bremen, 10 cs.

PACKING PAPER

Chas. Happel, Black Gull, Rotterdam, 6 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Merchant, London, 6 cs.; A. Giese & Son, Statendam, Rotterdam, 2 cs.; ———, Hansa, Hamburg, 75 bls.; A. W. Fenton, Co., Hansa, Hamburg, 210 bls.

SURFACE COATED PAPER

Gevaert Co. of America, Black Eagle, Antwerp, 72 cs.; P. Putman, Pennland, Antwerp, 9 cs.; Gevaert Co. of America, by same, 62 ce.; Globe Shipping Co., Hansa, Hamburg, 3 cs.; Phoenix Shipping Co., by same, 2 cs.

BARYTA COATED PAPER

Globe Shipping Co., Hansa, Bremen, 1 cs.; Globe Shipping Co., Europa, Bremen, 19 cs.

BASIC PAPER

Schwarz & Co., Black Eagle, Antwerp, 4 cs.; P. Putman, Pennland, Antwerp, 10 cs.; Globe Shipping Co., Europa, Bremen, 19 cs.

METAL COATED PAPER

K. Pauli Co., Hansa, Hamburg, 1 cs.; K. Pauli Co., Hansa, Bremen, 27 cs.

PHOTO-PAPER

American Express Co., Hansa, Hamburg, 13 cs.

DECALCOMANIAS

Sellers Transportation Co., Hansa, Hamburg, 15 cs.

TISSUE PAPER

W. J. Byrnes, Aquitania, Southampton, 5 cs.; W. J. Byrnes, American Merchant, London, 1 cs.; F. C. Strype, American Shipper, Liverpool, 4 cs.

PAPER TUBES

———, Hansa, Hamburg, 48 ctns.

CARDBOARD

American Express Co., Hansa, Hamburg, 22 bls.

MISCELLANEOUS PAPER

National City Bank, Tai Ping, Yokohama, 9 cs. ———, Tai Ping, Kobe, 20 cs.; Japan Paper Co., N. Maersk, Kobe, 19 cs.; National Pulp & Paper Co., Inc., Drottningholm, Gothenburg, 3305 rolls, 488 bdls.; 73 bls.; ———, by same, 4 rolls; F. L. Kramer & Co., by same, 127 bls.; Almo Trading & Importing Co., Champlain, Havre, 38 cs.; Keller Dorian Paper Co., by same, 5 cs.; Japan Paper Co., Pr Johnson, Genoa, 13 cs.; T. N. Fairbanks, Co., by same, 3 cs.; Steiner Paper Corp., Hansa, Bremen, 3 cs.; Jay Madden Corp., by same, 12 bbls, 1 cs.

RAGS, BAGGINGS, ETC.

The Barrett Co., Waugekan, Havre, 228 bls. rags; J. Flannery, by same, 127 bls. rags; G. W. Millar & Co., by same, 149 bls. rags, 46 bls. dark cottons; Harris Goldman & Co., by same, 137 bls. rags; S. Shapiro & Son, by same, 73 bls. rags; D. M. Hicks, Inc., Waukegan, Dunkirk, 15 bls. hemp twines; Darmstadt Scott & Courtney, by same, 58 bls. bagging; J. Flannery, by same, 31 bls. rags; New England Waste Co., Tai Ping Kobe, 250 bls. cotton waste; Damstadt Scott & Courtney, by same, 144 bls. rags; N. Schwab & Son, Black Eagle, Antwerp, 57 bls. cotton waste; Philadelphia National Bank, by same, 127 bls. cotton waste; Whaling Waste Products Co., by same, 144 bls. jute card waste; W. Steck & Co., by same, 98 bls. jutecard waste; Royal Manfg. Co., by same, 197 bls. cotton waste; American Express Co., by same, 66 bls. rags; Darmstadt Scott & Courtney, Mongioia, Leghorn, 47 bls. rags; ————, Pennland, Antwerp, 338 bls. bagging; Manufacturers Trust Co., Nordkap, Buenos Ayres, 27 bls. cotton waste; ———, by same, 28 bls. old canvas; E. J.

Keller Co., Inc., Black Gull, ———, 46 bls. rags; Banco Commercial Italiane Trust Co., H. Jaspar, Antwerp, 86 bls. jutecard waste; Chase National Bank, by same, 103 bls. rags; Darmstadt Scott & Courtney, Statendam, Rotterdam, 73 bls. rags; ———, by same, 86 bls. rags; ———, American Shipper, Manchester, 38 bls. cotton waste; E. J. Keller Co., Inc., Colamer ———, 204 bls. rags; J. Flannery, Collamer, Havre, 29 bls. rags; E. J. Keller Co. Inc., Pr. Johnson, ———, 70 bls. rags; Guaranty Trust Co., Hansa, Hamburg, 5 bls. bagging.

OLD ROPE

E. J. Keller Co., Inc., Exchange, ———, 94 coils; W. Steck & Co., Collamer, Havre, 66 coils.

CHINA CLAY

Orbis Products Trading Co., Laconia, Liverpool, 96 bags; Paper Makers Importing Co., Benwood, Fowey, 1593 tons, 1 cwt.; J. W. Higman Co., Inc., by same, 180 bags.

CASEIN

———, Pan America, Buenos Ayres, 84 bags.

WOOD PULP

Tradesmans National Bank, Argosy, Norrsundet, 1920 bls. sulphite, 415 tons; Price & Pierce, Ltd., Argosy, Wallvik, 125 bls. mechanical pulp 25 tons; 12,000 bls. sulphate pulp, 2,000 tons; 1350 bls. sulphite, 225 tons; Perkins Goodwin & Co., Argosy, Gdynia, 965 bls. woodpulp, 148 tons; Gottesman & Co., Inc., Drottningholm, Gothenburg, 1800 bls. sulphate; Perkins Goodwin & Co., by same, 419 bls. sulphate; Gottesman & Co., Inc., Hansa, Sweden, 750 bls. woodpulp; Bank of N. Y. Trust Co., Hansa, Hamburg, 1120 bls. woodpulp, 224 tons; Castle & Overton, Inc., by same, 140 bls. woodpulp 28 tons.

WOODPULP BOARDS

H. Fuchs & Son, Drottningholm, Gothenburg, 32 bls.

NEWARK IMPORTS

WEEK ENDING NOVEMBER 9, 1935

H. G. Craig Co., Donpaco, Donnacona, 301 rolls newsprint.

PORTLAND IMPORTS

WEEK ENDING NOVEMBER 9, 1935

Gottesman & Co., Inc., Lagaholm, Sweden, 3600 bls. woodpulp.

BOSTON IMPORTS

WEEK ENDING NOVEMBER 9, 1935

T. D. Downing & Co., Winona County, Glasgow, 14 bls. rags; Chase National Bank, by same, 32 bls. bagging; 1st Nat'l Bank of Boston, Black Eagle, Antwerp, 50 bls. flaxwaste; C. H. Powel Co., by same, 216 bls. cotton waste; ———, by same, 166 bls. cotton waste, 89 bls. rags; Royal Manfg. Co., by same, 403 bls. cotton waste; Ayres W. C. Jones Co., by same, 64 bls. cotton waste; True & McClelland Co., by same, 65 bls. jutecard waste; F. J. Fawcett, by same, 237 bls. flaxwaste; American Express Co., by same, 130 bls. wrapping paper; E. J. Keller Co., Inc., Black Eagle, ———, 30 bls. bagging; American British Chemical Supplies, Collingsworth, Buenos Ayres, 417 bags, casein; ———, American Merchant, London, 159 bls, wastepaper; Brown Bros., Harriman & Co., by same, 63 coils old rope; Crocker Burbank Co., by same, 148 bls. wastepaper; ———, Pr. Johnson, Alexandria, 79 bls. rags; Atkinson Haserick & Co., Pr. Johnson, Genoa, 25 cs. paper.

PHILADELPHIA IMPORTS

WEEK ENDING NOVEMBER 9, 1935

New England Waste Co., Tai Ping, Kobe, 100 bls. cotton waste; Price & Pierce, Ltd., Argosy Wallvik, 300 bls. sulphite 50 tons; Lagerloef Trading Co., Argosy Helsingfors, 1862 bls. sulphite 316 tons; Wilkinson Bros. & Co., Inc., by same, 140 rolls newsprint; Castle & Overton, Inc., Winona County, Glasgow, 102 bls. newcuttings; Philadelphia National Bank, Black Eagle, Antwerp, 355 bls. rags; Schwarz Bros., by same, 6 cs. basic paper; Loumar Textile By-Products Co., by same, 20 bls. bagging; ———, Collingsworth, Buenos Ayres, 50 bags casein; E. J. Keller Co., Inc., Black Gull, ———, 193 bls. rags; Harvey Paper Mills, Exchange, Marseilles, 165 coils old rope; E. J. Keller Co., Inc., Exchange, ———, 339 bls. rags; E. J. Keller Co., Inc., Collamer, ———, 373 bls. rags; Gottesman & Co., Inc., Ditmar Koel, Sweden, 3600 bls. woodpulp.

TRENTON IMPORTS

WEEK ENDING NOVEMBER 9, 1935

J. W. Higman Co., Inc., Benwood, Fowey, 448 tons, 8 cwt. china clay; 80 bags, same; Paper Makers Importing Co., by same, 756 tons, 5 cwt. china clay.

WILMINGTON IMPORTS

WEEK ENDING NOVEMBER 9, 1935

Price & Pierce, Ltd., Argosy, Wallvik, 3000 bls. sulphate, 500 tons; Perkins Goodwin & Co., Argosy, Gdynia, 492 bls. sulphite, 76 tons.

BALTIMORE IMPORTS

WEEK ENDING NOVEMBER 9, 1935

New England Waste Co., Tai Ping, Kobe, 100 bls. cotton waste; Congoleum Nairn Co., Waukegan, Havre, 589 bls. rags; Certainteed Products Corp., by same, 123 bls. rags; Certainteed Products Corp., Waukegan, Dunkirk, 9 bls. rags; Congoleum Nairn Co., by same, 85 bls. rags; Banco Commercial Italiane Trust Co., Exchange, Genoa, 427 bls. dark cottons; Chase National Bank, by same, 158 bls. dark cottons; Congoleum Nairn Co., Exchange Marseilles, 388 bls. rags.

NORFOLK IMPORTS

WEEK ENDING NOVEMBER 9, 1935

Chase National Bank, Waugekan, Havre, 170 bls. bagging; J. W. Higman Co., Inc., Benwood, Fowey, 497 tons, 1 cwt. china clay; Paper Makers Importing Co., by same, 893 tons, 17 cwt. china clay.

MONTREAL IMPORTS

WEEK ENDING NOVEMBER 9, 1935

Gottesman & Co., Inc., Sonnavind, Sweden, 13,500 bls. woodpulp.

Rushmore Paper Mills in Operation

[FROM OUR REGULAR CORRESPONDENT]

GOUVERNEUR, N. Y., November 9, 1935—Operations at the Rushmore Paper Mills are now being maintained on a steady basis. Some preliminary runs had been made prior to this week and officials claim the results were satisfactory. Orders indicate that the mill will produce paper steadily throughout the winter and the present force will be enlarged as the business expands. The plant was purchased from the Oswegatchie Paper Company by the New York City concern early last summer and extensive repairs have been in progress since. The mill has not been operated for several years, and the renewal of operations is expected to prove beneficial to the entire community.

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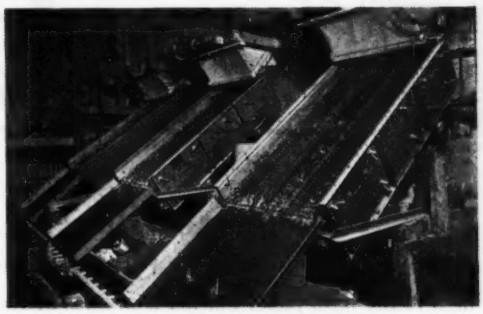

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, November 13, 1935.

Business in the local paper market continues active. Demand for the various standard grades of paper is well sustained and the outlook for the future is considered promising. Sales forces of the leading paper organizations are booking a satisfactory volume of orders. Prices are generally holding to schedule.

The newsprint paper market is marking time at present. Production in North American mills during October amounted to 377,947 tons, compared with 342,857 tons for the corresponding period last year. Stocks at Canadian and U. S. mills at the end of October totalled 87,958 tons.

Conditions in the fine paper market are quite satisfactory. Demand for book, cover, bond and ledger papers is holding up well. Prices are steady to firm. Tissues are moving in good volume. The coarse paper market is sharing the general business improvement. Kraft papers are in seasonal request.

Mechanical Pulp

The ground wood pulp market is attracting more interest than of late. Manufacturing operations in the United States, Canada and abroad are practically keyed to consumption and the statistical position of the industry is sound. Prices are holding to previously quoted levels, in most instances.

Chemical Pulp

Steadiness prevails in the chemical pulp market. Paper mill demand for the various domestic and imported grades is persistent. With offerings rather scarce, kraft pulp is exhibiting a very strong undertone. Bleached and unbleached sulphite are also displaying strength. Other grades are reported steady.

Old Rope and Bagging

The old rope market continues quiet. Demand for both domestic and foreign old manila rope is light. Mixed strings are fairly active. No radical price changes have been reported. The bagging market is very firm. Both scrap and gunny bagging are moving freely, while roofing bagging is steady.

Rags

Trading in the domestic rag market is fairly brisk. Both new and old cotton rags are in good demand. No. 1 white shirt cuttings are particularly strong, thanks to orders from abroad, in addition to the persistent domestic request. Roofing grades are less active, as usual at this season.

Waste Paper

The waste paper market is showing signs of improvement. Board mill demand for the lower grades is better and dealers are hoping for higher prices in the near future. The higher grades of paper stock continue steady, especially white envelope cuttings and hard and soft white shavings.

Twine

Demand for the various varieties of twine is well sustained. Supplies are moving into consumption in heavy volume. The outlook for the closing weeks of the year is encouraging. The recently advanced quotations on hard and soft fiber twines are being maintained, without difficulty.

Arthur C. Hall Dead

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 12, 1935.—Word was received today by John Carter & Co., Inc., of the death this morning at five o'clock of their treasurer and general manager, Arthur C. Hall, at St. Petersburg, Fla. No other details were given in the telegram. Mr. Hall had driven to St. Petersburg with his wife, leaving here October 26, and had expected to return to Boston this week.

Mr. Hall had been with John Carter & Co., Inc., a great many years. After a valuable business experience in other industries, Mr. Hall returned to this firm, in 1903 becoming assistant treasurer. In 1908, at the death of John Carter, Mr. Hall became treasurer and general manager and guided the corporation into the higher place it holds today among the leading houses in the fine paper industry. A fully informed paper merchant with a real interest in the success of the customers of his company, Mr. Hall had the respect of fellow merchants and the confidence of the paper consumers of New England.

Fifty Years with Corn Products

The fiftieth anniversary of Charles Ebert's connection with the corn products industry was celebrated at a dinner given in his honor at the Downtown Athletic Club. In addition to the entire executive staff of the Corn Products Refining Company some 200 of his business associates and friends were present.

In the midst of a setting attractively decorated for the occasion, glowing tributes were paid to the guest of honor by the speakers for his many valuable contributions toward the development of important manufacturing processes. Gifts from the employees of several of the company's domestic offices and plants as well as congratulatory messages from many of the foreign manufacturing units were given to Mr. Ebert.

Aid Plans of Package Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., November 12, 1935—Strong efforts are being made to retain the Package Paper Company of which Arthur Havemeyer is president, and which is located in this city. Plans for reorganization are being opposed by the Union Trust Company of Springfield, which favors, under the conditions of the reorganization proposed, liquidation of the business.

Mayor Henry J. Toepfert and Conrad J. Hemond, secretary of the Holyoke Chamber of Commerce, have had interviews the past week seeking a solution that will avoid liquidation. The matter is still unsettled.

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SOUTH WINDHAM, CONNECTICUT

Paper mill, paper cutting and paper bag machinery.

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, November 13, 1935.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—Demand for bleaching powder is persistent. The contract movement is normal. Prices for the coming year will be advanced $2 per ton, it is announced. Bleaching powder is quoted at from $1.90 to $2.15 per 100 pounds, in drums, at works.

CASEIN.—The casein market is firmer. Domestic standard ground is quoted at 14½ and finely ground at 15; Argentine standard ground at 14¼ and finely ground at 14¾; French standard ground at 14½ and finely ground at 15 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Steadiness prevails in the caustic soda market. Contract shipments are moving in good volume. Prices are firm. Solid caustic soda is quoted at from $2.60 to $3.10; while the flake and ground are selling at from $3 to $3.05 per 100 pounds, at works.

CHINA CLAY.—The china clay market is displaying strength. Shipments against contract are going forward regularly. Imported china clay is quoted at from $13.50 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at mine.

CHLORINE.—Due to continued heavy demand for chlorine and the short supply position, producers have announced an advance of $3 per ton for 1936. The prevailing price is from $2 to $2.40 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is irregular. Paper making gum rosin is quoted at $4.55@4.60 and wood rosin at $4.75 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.57½ per 100 pounds, in tank cars, at works.

SALT CAKE.—Business in the salt cake market is fairly active. The contract movement is normal. Salt cake is still quoted at from $12 to $13; and chrome salt cake at from $11 to $12 per ton, at works. Imported salt cake is selling at from $12 to $13 per ton, ship side.

SODA ASH.—The soda ash market is exhibiting a strong undertone. Shipments against contract are fairly heavy. Prices are firm. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—The starch market is easier. Paper mill demand is moderately active. The contract movement is routine. Special paper making starch is now quoted at $3.44 per 100 pounds, in bags; and at $3.71 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—The sulphate of alumina market is displaying strength. Prices are holding to schedule. Commercial grades are quoted at from $1.35 to $1.50; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and nearby car loads, the quotation is $21 per ton.

TALC.—Conditions in the talc market are fairly satisfactory. Contract shipments are going forward at a steady pace. Domestic talc is quoted at from $16 to $18 per ton, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.35	@	5.75
S. & S. C. Litho.	5.60	@	6.00
M. F.	5.10	@	5.50
Coated and Enamel	5.90	@	6.55
Coated Litho	5.90	@	6.55
Tissues—Per Ream—			
White No. 1	.82½	@	.85
White No. 2	.67½	@	—
Anti-Tarnish M. G. only	1.00	@	—
Colored	.85	@	—
Kraft	.70	@	—
Manila	.67½	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	4.00	@	4.50
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.50	@	3.50
Glassine—			
Bleached	.11	@	—
Unbleached	.09	@	—

(The following Quotations are Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Kraft—			
No. 1 Northern	4.12½	@	4.75
Standard	4.00	@	—
Southern	3.87½	@	—
Boards—per ton—			
News	39.00	@	41.50
Chip	37.50	@	40.00
Sgl. Mla. Ll. Chip	42.50	@	45.00
Jute Lined Chip	42.50	@	45.00
Kraft Liners	52.50	@	—
White Patent Coated	55.00	@	57.50
Binders Boards	67.00	@	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	21.00	@	22.00
Dry	21.00	@	22.00

(F. o. b. Mill)

No. 1 Domestic and Canadian	18.00	@	24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Division 1	2.60	@	—*
Division 2	2.55	@	—*
Division 3	2.50	@	—*
Prime Qualities—			
Class 1. All Prime Easy Bleaching	2.05	@	—*
Other Than Easy Bleaching—			
Class 2. Higher than Standard	2.00	@	—*
Class 3, Standard	1.95	@	—*
Class 4, Lower than Standard	1.90	@	—*

(On Dock, Atlantic Ports)

Kraft No. 1	1.75	@	1.80
Kraft No. 2	1.60	@	1.70

(F. o. b. Pulp Mill)

Kraft Domestic	1.75	@	1.80

(Delivered)

Soda Bleached	2.50	@	—

* Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.65	@	6.90
Silesias No. 1	4.50	@	4.75
New Unbleached	7.00	@	7.25
New Soft Blacks	3.00	@	3.25
Blue Overall	4.75	@	5.00
Fancy	2.50	@	2.75
Washables	1.90	@	2.15
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.75	@	1.85
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.75	@	1.85
Miscellaneous	1.45	@	1.55
Roofing Rags—			
No. 1	1.55	@	1.60
No. 2	1.35	@	1.40
No. 3	1.00	@	1.05
No. 4	.95	@	1.00
No. 5A	.90	@	1.00

Foreign Rags

New Rags

New Dark Cuttings	2.00	@	2.25
New Mixed Cuttings	1.80	@	1.90
New Light Silesias	3.75	@	4.00
Light Flannelettes	4.00	@	4.25
Unbleached Cuttings	Nominal		
New White Cuttings	6.50	@	6.75
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	2.00	@	2.25
French Blue Linens	2.30	@	2.40
German Blue Linens	2.15	@	2.25
German Blue Cottons	1.70	@	1.80
Checks and Blues	1.70	@	1.80
Linsey Garments	1.95	@	2.05
Dark Cottons	1.50	@	1.60
Old Shopperies	1.00	@	1.05
New Shopperies	1.25	@	1.35
French Blues	2.00	@	2.25

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.00	@	2.10
Domestic	1.75	@	1.85
Wool Tares, light	1.70	@	1.75
Wool Tares, heavy	2.00	@	2.15
Bright Bagging	1.75	@	1.80
Manila Rope—			
Foreign	1.85	@	2.00
Domestic	1.75	@	2.00
Mixed Strings	.85	@	1.00
New Burlap Cut	2.00	@	2.25
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.45	@	2.55
Ordinary Hard White No. 1	2.10	@	2.15
Hard White No. 2	1.90	@	2.00
Soft White No. 1	1.80	@	1.90
Flat Stock—			
Stitchless	.65	@	.75
Over issue Mag	.65	@	.75
Solid Flat Book	.55	@	.60
Crumpled No. 1	.35	@	.40
Solid Book Ledger	1.50	@	1.65
Ledger Stock	.85	@	.90
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.70	@	1.80
New Cuttings	1.35	@	1.45
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.10	@	1.20
News—			
No. 1 White News	1.45	@	1.50
Strictly Overissue	.50	@	.55
Strictly Folded	.32½	@	.35
No. 1 Mixed Paper	.25	@	.27½

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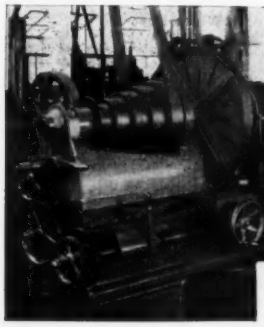

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Bratislava, Czecho-Slovakia
SVANÖ AKTIEBOLAG
Svanö, Sweden

Twines

(F. o. b. Mill)

(Soft Fibre)

Coarse Polished—

India	.12¾	@	.15¼
Belg. White Hemp	.13¾	@	.14¼
India Compress	.13¼	@	.13¾

Fine Polished—

Fine India	.21	@	.23
Special	.19	@	.21

Unpolished—

Box	.11½	@	.12
Paper Makers	.09	@	.13½
Tube Rope	.09½	@	.14½
Wall Paper	.10½	@	.14
Wrapping	.14½	@	.20½
Special	.14½	@	.15
Soft Fiber Rope	.11¾	@	.12¼

(Hard Fibre)

Bond	.11	@	.19½
Anchor	.10½	@	.12

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.12	@	.50
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.11
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	41.00	@	—
Sheets, open	46.00	@	48.50
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers

(F. o. b. Chicago)

Shavings—

No. 1 White Envelope Cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45

Old Newspapers—

No. 1	.30	@	.35
No. 1 Mixed Paper	.25	@	.30

Roofing Stocks—

No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(Delivered Philadelphia)

Bonds	.05-9/10	@	.38
Ledgers	.06-9/10	@	.40
Writings—			
Fine No. 3	.05	@	.06
Superfine	.10	@	.12
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Book, M. F.	.05¼	@	.06¾
Book, S. S. & C.	.05½	@	.07½
Book, Coated	.06½	@	.09
Coated Lithograph	.06¾	@	.08½
Label	.07	@	.11
No. 1 Jute Manila	6.25	@	—
Manila Sul., No. 1	5.25	@	—
Manila No. 2	3.75	@	—
No. 1 Kraft	5.00	@	—
Southern Kraft	4.75	@	—
Common Bogus	.03	@	—
News Print Rolls	40.00	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.40	@	1.75
Best Tarred, 3 ply	2.00	@	2.25

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.06¼	@	—
New White, No. 2	.04½	@	—
Light Silesias	.04	@	—
Silesias, No. 1	.04	@	—
Black Silesias, soft	.03	@	—
New Unbleached	.06	@	—
Washable, No. 1	.01¾	@	—
Blue Overall	.05	@	.05½
Cottons—According to grades—			
Washable, No. 2	.02½	@	.04½
New Blue	.01½	@	—
Fancy	.01½	@	—
New Black Soft	.02	@	.03¼
New Light Seconds	.04	@	—
New Dark Seconds	1.10	@	—
Khaki Cuttings—			
No. 1 O. D.	.04	@	—
No. 2 Mixed	.03	@	.04
Corduroy	.01¾	@	—
New Canvas	.03½	@	.04½
New Black Mixed	.02¼	@	.02½

Domestic Rags (Old)

White No. 1—			
Repacked	3.25	@	3.50
Miscellaneous	2.00	@	3.00
Thirds and Blues—			
Miscellaneous	1.50	@	1.75
Repacked	2.25	@	2.50
Black Stockings (Export)	4.00	@	4.50
Roofing Stock—			
Foreign No. 1	.90	@	1.10
Repacked	1.30	@	1.50

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	—
Domestic	1.75	@	2.00
Manila Rope	2.50	@	—
Sisal Rope	.75	@	1.00
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.75	@	1.80
No. 2	.80	@	.90
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White	1.80	@	1.85
No. 2 Soft White	1.25	@	1.30
No. 1 Mixed	—	@	.75
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.00	@	1.10
No. 1 Books, heavy	.55	@	.60
No. 1 New Manila	1.50	@	—
Print Manila	.50	@	.60
Container Manila	—	@	.50
Old Kraft	1.00	@	—
No. 1 Mixed Paper	—	@	.30
Straw Board Chip	.40	@	—
Binders Board Chip	.40	@	—
Corrugated Board	.55	@	—
Overissue News	.60	@	—
Old Newspapers	.40	@	—

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.07¼	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¼	@	.06½
Manila, Sul. No. 2	.03¼	@	.04½
No. 1 Kraft	.04¼	@	.05
No. 2 Kraft	.04½	@	.04¾

(F. o. b. Boston)

Southern Kraft	.03¼	@	.04¼

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots)

Common Bogus	.02	@	.02¾

(Delivered New England points)

News Print Rolls	39.50	@	—
Straw Board, rolls.009	—	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	40.00	@	45.00
Chip Board	37.50	@	40.00
Chip Board (Creasing)	37.50	@	40.00
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated News Board (Bender)	55.00	@	65.00
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	67.00	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.00	@	2.20
No. 1 Soft White	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.30	@	1.40
No. 1 Old Manila	.60	@	.65
White Blank News	1.25	@	1.30
No. 1 Kraft	—	@	1.00
Mixed Papers	.22½	@	.25
Print Manila	.50	@	.60
Container Manilas	.27½	@	—
Old Newspapers	.25	@	.27½
Overissue News	—	@	.35
Box Board Chips	—	@	.25
Corrugated Boxes	.35	@	.37½
Kraft corrugated boxes	.85	@	—
Screening Wrappers	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.10	@	—
Domestic	2.10	@	2.25
Transmission Rope	.90	@	1.00
Jute Rope	1.60	@	1.75
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	2.00	@	—
Domestic	1.75	@	1.80
Bleachery Burlap	4.00	@	4.50
Scrap Burlap—			
Foreign	1.85	@	1.90
Domestic	1.60	@	1.75
Scrap Sisal	1.75	@	2.00
Scrap Sisal for Shredding	1.75	@	2.00
Wool Tares, heavy	1.90	@	2.00
New Burlap Cuttings	1.75	@	1.90
Australian Wool Pouches	3.00	@	3.25
Heavy Baling Bagging	2.50	@	2.75
Paper Mill Bagging	1.25	@	—
Bagging No. 2	.90	@	.95

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.01¾	@	.02
New White No. 1	.06	@	.06¼
New White No. 2	.04	@	.04¼
Silesias No. 1	.04½	@	—
New Black Silesias	.02½	@	.03
Soft Unbleached	.06½	@	.06¾
Blue Cheviot	—	@	4.65
Fancy	.0225	@	.023
Washable	.0165	@	.0170
Cottons—According to grades—			
Blue Overalls	.04¾	@	.05
New Black, soft	.04	@	.04¾
Khaki Cuttings	.03½	@	.03¾
O. D. Khaki	.03¼	@	.04
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¾
Paper Mill Bagging	1.10	@	1.25

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.50	@	2.00
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	2.50	@	3.00
Roofing Stock—			
No. 1	1.50	@	1.60
No. 2	1.35	@	1.40
No. 3	1.05	@	1.15

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.55	@	1.70
New White Shirt Cuttings	5.50	@	6.00
Dutch Blues	2.25	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.90	@	—
Old Linsey Garments	2.10	@	—
New Silesias	4.50	@	4.75

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.11	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.12	@	—
No. 2 Colored	.09	@	—
Ledgers (sulphite)—			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.50	@	—
No. 2 M. F. (Carloads)	6.00	@	—
No. 3 M. F. (Carloads)	6.00	@	—
No. 1 S. C. (Carloads)	7.00	@	—
No. 2 S. C. (Carloads)	6.50	@	—
No. 3 S. C. (Carloads)	6.50	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	5.25	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft, No. 2	5.40	@	—

(F. o. b. Cars Toronto)

News, per ton—			
Rolls (contract)	39.50	@	—
Sheets	44.50	@	—

Pulp

Ground wood	27.00	@	—
Unbleached Sulphite	42.00	@	—
Book (Class 1)	58.00	@	—
Writing (Class 2)	59.00	@	—
Select (Class 3)	60.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.25
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.40
Printed Manilas	.50	@	.60
Kraft	1.00	@	1.60
News and Scrap—			
Strictly Overissue	.55	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

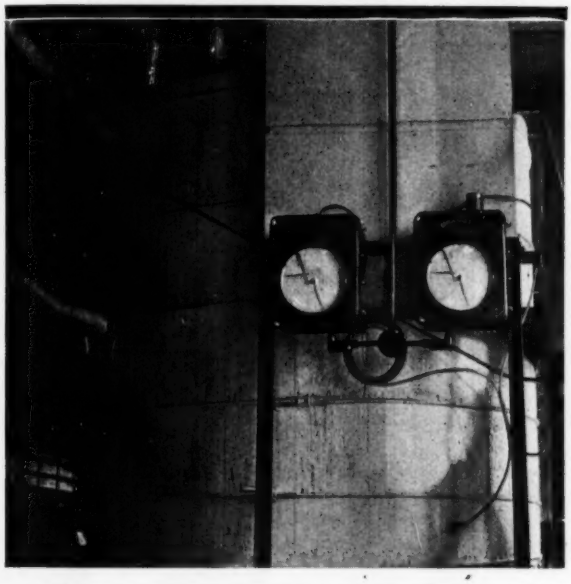
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06¼	@	.06½
Fancy Shirt Cuttings	.02¼	@	.02½

Controlling

SIZE TEMPERATURES

IMPROVES PROCESSING



INSTALLED on the size tanks in the mill of the Everett Pulp & Paper Co., Everett, Wash., these two Bristol's Recorder Controllers maintain the sizing solution at a constant temperature. By eliminating critical fluctuation, they make possible a substantial saving in steam, improve processing, and contribute to uniformity in product quality. Bristol's Recorders and Controllers offer comparable economies in regulating the intensity of beating and the duration of each beating cycle, in preventing both cold and hot grinding, in registering temperature and pressure of the sulphite liquid, preparing digester cooking acid and on other important mill operations.

Tell us your problems. We can help.

Above: Two Bristol's Electrically Operated Temperature Recorder Controllers, on Size Tank serving No. 3 Paper Machine, Everett Pulp & Paper Co., Everett, Wash.

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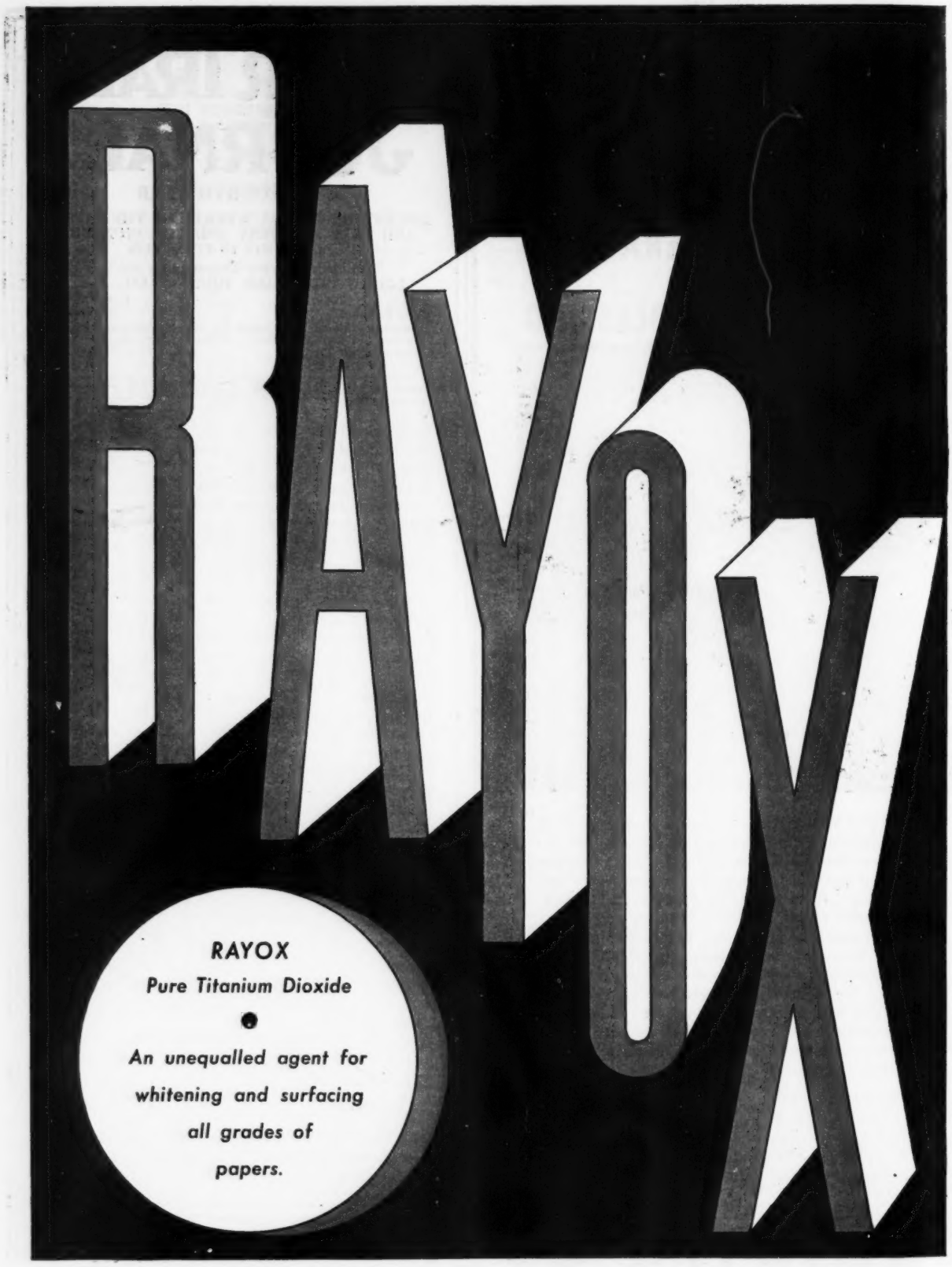

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